International climate negotiation conditions

van der Gaast, Wytze

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Past and Future

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Wijtze Pieter van der Gaast

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Promotor
Prof. dr. mr. C.J. Jepma

Beoordelingscommissie
Prof. dr. A.P.C. Faaij
Prof. dr. S. Brakman
Prof. dr. Z.X. Zhang

Voor Anna en Alicia

Acknowledgements

Since 1994, I have been working on topics related to climate change policy making. Roughly speaking, during the first half of this period, I worked mostly on issues related to the design and implementation of Joint Implementation and the Clean Development Mechanism, which are economic policy instruments included in the UN Framework Convention on Climate Change (UNFCCC) of 1992 and the Kyoto Protocol of 1997. Most of this work was based on (research) projects for the Netherlands Government, UNFCCC secretariat and the European Commission.

Since 2005, the main focus of my work has been on technology transfer for climate and development. As part of project teams working for the European Commission, UN Development Programme (UNDP), UN Environment Programme (UNEP) and as advisor to the UNFCCC secretariat, I have focussed on how technology choices for climate change mitigation and adaptation can be embedded in developing countries' national development planning.

During both periods, it struck me that international climate policy making is often subject to negotiations between countries. Irrespective of whether it concerns high-level policy decisions (such as legally-binding commitments) or designing a policy instrument, countries try to balance their role in a globally supported agreement with how this aligns with their domestic social and economic priorities. This observation was the main motivation for this study.

I would like to thank my promotor Catrinus Jepma for all his advice during the several stages of this study. His careful monitoring of the study design, process and tactics contributed strongly to the end result. The members of the assessment committee, Steven Brakman, André Faaij and ZhongXiang Zhang, are gratefully acknowledged for their willingness to read the manuscript.

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Chapter 1. Introduction and Problem Statement

1.1. Global Warming as an Emerging Policy Issue during the 1980s[1]

The adoption of the United Nations Framework Convention on Climate Change (UNFCCC) at the 1992 Earth Summit was not the starting point of international climate talks; rather, it was the conclusion of a series of governmental meetings and conferences which started already at the end of the 1970s. In 1979, the World Meteorological Organisation (WMO) organised, in Geneva (Switzerland), the First World Climate Conference which was primarily a scientific meeting to assess existing knowledge of how higher atmospheric greenhouse gas (GHG) concentration levels could lead to average temperature increases (WMO, 1979).

From a political perspective, human-induced global warming was in those days mainly considered a theoretical possibility, insufficiently backed by scientific evidence and surrounded by relatively large uncertainties (Arts, 1998, p. 102). Nevertheless, the basic concept of global warming was quite clear. The climate systems on earth are determined by a complex process that basically balances the inflow of solar radiation into the atmosphere, the trapping of some of this heat in the atmosphere by GHGs, and the re-radiation of heat back into space (Jepma & Munasinghe, 1998, pp. 7-14) (Gubasch, et al., 2013, p. 126) (see Box 1-1). During the 1980s, climate models were further improved and awareness of the global warming issue among the public and politicians increased (Arts, 1998, p. 103). In 1985, at the Villach Conference (9-15 October 1985, Villach, Austria) scientists called for the world to take action on climate change which raised the profile of the whole issue and engaged a wider audience (WMO, 1986).

In 1988 the WMO and the UN Environment Programme (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) in order to bundle scientific knowledge into an intergovernmental scientific panel under the auspices of the UN. IPCC's main task became to address climate change issues from a policy maker's perspective. Since its start, the IPCC has completed five so-called Assessment Reports (Houghton, et al., 1990), (IPCC, 1995), (IPCC, 2001), (IPCC, 2007) and (IPCC, 2013), which contain the work of three Working Groups representing particular categories of scientific disciplines.

At international climate conferences, the increased climate awareness resulted in international high-level discussions among policy makers about potential climate policy measures (Barrett, 2005). For example, the 1988 climate change conference organized by the Government of Canada recommended the so-called Toronto Target, which stipulated an arbitrary objective of reducing global CO_2 emissions by 20% below 1989 levels (Arts, 1998, p. 103). The Toronto conference was followed in 1989 by, among others, the Hamburg Conference which concluded that "establishment of explicit carbon emission budgets for each country within an international framework of agreement" should be the first international aim and therefore recommended a 30% CO_2 emission reduction (Grubb, 1990). Moreover, two ministerial conferences on climate change were organised by the Netherlands Government (in 1989) in Noordwijk at which participants were much more reserved regarding recommendations on a quantitative emission

[1] Sections 1.1 - 1.3 have partly been included in Gaast & Begg, 2012, pp. 9-15.

reduction target. Eventually, the 'Noordwijk Declaration' did not mention a target level such as in the 'Toronto Target'.

The approach recommended at Toronto, Hamburg and Noordwijk to agree on international climate policy targets rather than relying on individual country actions was modelled after the successful approach of the Montreal Protocol (Barrett, 2005) and the EU's Large Combustion Plant Directive (Grubb, 1990). However, the complexities related to negotiating such targets and timetables for climate policy making were acknowledged as climate change is a global issue which requires a global approach and which is complicated by large differences between countries in terms of social and economic welfare and the extent to which countries have contributed to GHG emissions (Grubb, 1990). Nonetheless, since the late 1980s UN-led climate policy negotiations have resulted in several milestones, such as the adoption of the UNFCCC in 1992 and the Kyoto Protocol in 1997.

Box 1-1. Global warming through heat-trapping

An important determinant for the temperatures on earth is the heat-trapping effect by GHGs (the greenhouse effect). These gases mix evenly in the atmosphere and as such they create a 'blanket' around the globe, which traps heat underneath it. Basically, the greenhouse effect has a natural cause and historically GHGs have existed in the atmosphere due to the natural interaction between earth and atmosphere. It is also the main reason why the average temperature on earth has for the past 10,000 years been well above 0^{o} Celsius, whereas without the greenhouse effect it would have been well below zero (Jepma & Munasinghe, 1998) (Gubasch, et al., 2013, p. 126).

The greenhouse effect has gradually become an important policy issue because of the increasing awareness that the burning of fossil fuel has caused and will cause a significant increase in the concentration of GHGs in the atmosphere to (much) higher levels than before the industrial revolution. As (Jepma & Munasinghe, 1998) (Gore, 2006, pp. 66-67) show, during the past 1000 years up to around 1800, GHG concentrations in the atmosphere remained almost constant at a level of 280 parts per million by volume (ppmv). Since 1800, however, the concentration level has grown to around 400 ppmv in 2013 (NOAA, 2013).[2] This evidence, in combination with the knowledge of the heat trapping characteristics of GHGs, raised awareness among scientists and environmental NGOs that the trend of increasing GHG emissions through combustion of fossil fuels and a subsequent increase of atmospheric GHG concentrations could cause a human interference with global climate systems and thus enhance the natural greenhouse effect.

1.2. International Climate Policy Making during the 1990s - Towards a Legally Binding Climate Protocol

1.2.1. United Nations Framework Convention on Climate Change

In 1989, UNEP and the WMO initiated the preparations for negotiations on a framework convention on climate change. The idea was that this convention would contain basic principles and agreements which could subsequently be worked out in further detail through amendments and protocols. As

[2] The 400 ppmv level was measured on 9 May 2013 by NOAA (2013).

explained by (Grubb, 1990), the framework approach has the advantage that it can flexibly deal with evolving scientific knowledge and areas of concern.

During 1990 and 1992, negotiations took place during five sessions of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC).[3] During these negotiations it became clear that the positions of industrialised and developing countries strongly differed. Developing countries argued that since industrialised countries were responsible for most of the historical anthropogenic GHG emissions, they would have to take the lead by adopting quantified emission reduction targets. Most industrialised countries opposed such targets. A key challenge during the negotiations, therefore, was to agree on a global responsibility for the global climate and climatic impacts and how this responsibility could or should be differentiated between countries based on historical GHG emission patterns and socio-economic welfare levels (Grubb & Patterson, 1992). During the negotiations the latter concept has become known as the principle of 'common but differentiated responsibilities' (UNFCCC, 1992a, p. 2).

At the fifth session of the INC, negotiating countries agreed on a compromise text which contained an objective (not legally binding) for industrialised countries to return their GHG emissions to 1990 levels by the year 2000, while exempting developing countries from such quantitative targets. It also became clear that, for the time being, legally binding quantitative targets were not feasible.

The agreed negotiation text was adopted on 9 May 1992 at the UN Earth Summit (Rio de Janeiro, Brazil) as the UN Framework Convention on Climate Change (UNFCCC)[4]. The ultimate objective of the Convention is to achieve a stabilisation of GHG concentrations in the atmosphere "at a level that would prevent dangerous anthropogenic interference with the climate system" (UNFCCC, 1992a, p. 9 Art.2). This should be achieved "within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner" (UNFCCC, 1992a, p. 9 Art.2).

1.2.2. The Kyoto Protocol

After 1992, negotiations under the UNFCCC continued in the form of annual sessions of the Conference of the Parties or COP.[5] The first session was held in March-April 1995[6] in Berlin and here it was concluded that industrialised countries' stabilisation targets as agreed under the Convention were inadequate. This conclusion was based on an analysis of the national GHG emission inventories submitted by 15 industrialised countries (together representing 41% of global GHG emissions), as well as insights from the IPCC Second Assessment Report (IPCC, 1995, p. 22), which concluded, among other findings, that:

- Atmospheric GHG concentrations had continued to increase;

[3] INC was established on 21 December 1990 by the UN General Assembly (Resolution 45/212). It was scheduled that INC would deliver a draft Convention text that would be ready for signature at the 1992 UN Conference on Environment and Development (UNCED, Rio de Janeiro, Brazil, May-June 1992).

[4] See footnote 3

[5] The COP itself was established under the UNFCCC in Article 7 as the supreme body of the Convention with, among others, the task to periodically examine the obligations of the Parties.

[6] The first COP in 1995 could only be organised after the entry-into-force of the UNFCCC on 21 March 1994, 90 days after deposit of the 50th instrument of ratification (by Portugal, 21 December 1993).

- Climate had changed since the late 19th century; and
- The "balance of evidence suggests a discernible human influence on global climate".

In light of this, the COP initiated a negotiation process (the Berlin Mandate) towards a protocol with quantified emission reduction targets to be achieved within a certain timeframe. The result of this process was the adoption of the 'Kyoto Protocol' by the COP in December 1997 (at Kyoto, Japan) (UNFCCC, 1998). At the heart of the Kyoto Protocol was a joint GHG emission reduction target for industrialised countries of at least 5% below 1990 levels to be achieved within a 5-year commitment period from 2008 through 2012 (UNFCCC, 1998, pp. 3-5 Art. 3, Annex A). Most of the time during this almost three-year negotiation process, little progress was made. Again, countries struggled with the principle of 'common but differentiated responsibilities' which, in the view of developing countries, implied that quantified commitments would only apply to industrialised countries. Industrialised countries, on the other hand, doubted the usefulness of a protocol without commitments for, in particular, rapidly developing countries such as China, India, Mexico and Brazil (see for further details Chapter 3).

Even shortly before the negotiations in Kyoto, the US Congress instructed US negotiators not to agree on a protocol with quantified emission reduction commitments for industrialised countries only, and without 'meaningful participation' by the developing country Parties. Such a text would be considered harmful for US economic interests (Fletcher, 1997). During the first negotiation week in Kyoto this position was generally reflected by the interventions by the US delegation. However, there was a change at the beginning of the second negotiation week when US Vice-President Al Gore addressed the COP in person. The US delegation accepted a quantified emission *reduction* commitment, even though developing countries were exempted from such commitments in the Kyoto Protocol.[7] The agreement of the US delegation in Kyoto was never ratified by the US Congress though. On the contrary, in March 2001, the newly elected US President George W. Bush decided to withdraw US support from the, in his view, "fatally flawed" text.

Nevertheless, other countries managed to keep the Kyoto process on-going throughout 2001, partly by allowing industrialised countries more room for counting sequestration of carbon in soils and trees and agreeing on more flexible compliance procedures. Although these concessions were criticised for reducing the environmental integrity of the Kyoto Protocol,[8] they secured the support of important industrialised countries such as the EU, Russia, Canada, Japan and Australia.

[7] It must be noted that the Kyoto Protocol eventually contained various aspects which the US delegated had introduced in the negotiations, such as the decision that industrialised countries could fulfil their commitments flexibly, *i.e.* by spreading compliance across a five-year commitment period, by focusing on six GHGs instead of the initial focus on CO_2 and by applying GHG emissions trading.

[8] For example, because of the concessions, Japan's required emission reduction dropped from six percent below 1990 levels to a one percent reduction, while it was estimated that Canada could let its GHG emissions increase by five percent (Benedick, 2001).

1.3. Towards a Post-2012 Agreement

Immediately after the entry-into-force of the Kyoto Protocol in 2005[9] a new round of negotiations started on its continuation beyond 2012. By design, the Kyoto Protocol was the most suitable framework for these negotiations as it contained an infrastructure to guide countries through consecutive commitment periods. However, the Kyoto Protocol had not been ratified by all industrialised countries (*e.g.*, USA) and had kept a strong distinction between industrialised countries with quantified commitments and developing countries without such commitments. Consequently, at the eleventh session of the COP in 2005 (Montreal, Canada), it was decided to move on with negotiations in two separate tracks: one track would focus on the continuation of the Kyoto Protocol after 2012 (the Ad-hoc Working Group on continuation of the Kyoto Protocol or AWG KP) and the other would focus on long-term cooperative actions by all UNFCCC Parties (the Ad-hoc Working Group on Long-term Cooperative Action or AWG LCA). The latter track was primarily established to bring the USA back into the negotiations. Somehow, it was envisaged that eventually the two tracks would come together into one overall climate policy regime.

In 2007, COP-13 was hosted by Indonesia where it adopted the Bali Plan of Action, which outlined a process to "reach an agreement on long-term cooperative action up to and beyond 2012" (UNFCCC, 2008a). A first attempt to that failed in December 2009 when the Copenhagen Climate Conference[10] did not manage to reach consensus on the Copenhagen Accords. The final negotiation text in Copenhagen was therefore not legally binding. Instead, the COP took note of the text so that it was formally acknowledged and there was a mandate to follow up on its implementation.

Though not legally binding, the Copenhagen Accords invited industrialised countries to submit individual or joint economy-wide emission targets for the year 2020. In addition, it stated that "non-Annex I Parties to the Convention will implement mitigation actions"[11] which could partly be considered a break with the interpretation of the principle of 'common but differentiated responsibilities' as it implied that also developing countries would need to undertake GHG emission reduction measures. On 1 February 2010, less than two month after 'Copenhagen', 55 countries, including a number of developing countries, had submitted national pledges to cut and limit GHG emissions by 2020. These countries together accounted for 78% of global emissions from energy use. The EU, for instance, pledged a GHG emission reduction for the entire bloc of 20% by the year 2020 (JIN, 2010, p. 2).

A particularly important signal came from the so-called BASIC group, with Brazil, South Africa, India and China. On 24 January 2010, this group met in New Delhi and underscored their support to the Copenhagen Accords and announced the following emission reduction pledges (JIN, 2010, p. 2):

- Brazil: 36% emission reduction below business-as-usual by 2020;
- South Africa: 34% emission reduction below business-as-usual by 2020;

[9] The Kyoto Protocol could enter into force on 16 February 2005, 90 days after deposit of the instrument of ratification from the Russian Federation. With the Russian ratification the number of Annex I Parties became sufficiently large to represent at least 55% of the total GHG emissions of industrialised countries in 1990.

[10] COP-15 and fifth meeting of Kyoto Protocol Parties (COP-MOP).

[11] *Non-Annex I* refers to the countries that were not included in the UNFCCC Annexes of Parties with GHG emission stabilisation targets. In practice, the term *non-Annex I Parties* mainly refers to developing countries.

- India: 20% reduction in the carbon intensity by 2020 compared to 2005 levels;
- China: 45% reduction in the carbon intensity by 2020 compared to 2005 levels.

The US climate position remained uncertain after Copenhagen. Before December 2009, the Obama administration had proposed a 17% GHG emission reduction below 2005 levels by the year 2020. This percentage was included in a bill that passed the House of Representative during 2009, as well as in a similar climate bill that was discussed by the Senate. However, the Senate did not pass its bill before 'Copenhagen' and mid-term elections later in 2010 further reduced the chances of acceptance of the bill (JIN, 2010, p. 3).[12]

The Cancun Agreements of December 2010 (COP-16, Cancun, Mexico) reflected the shift in the negotiations since 'Copenhagen' from a top-down architecture where an overarching goal is translated in individual country targets (such as in the Kyoto Protocol) to one in which national pledges should add up to a joint international effort. In line with the Copenhagen Accords, the Cancun Agreements invite countries to formulate national targets ('pledges') and agree on international review procedures for these (Kok, et al., 2010). As such the Cancun Agreements created the possibility for countries to formulate packages of climate change mitigation actions derived from domestic circumstances (Gaast, 2011).

Looking at the history of the negotiations, the softer, *i.e.*, more voluntary based, 'pledge and review' approach did not come as a surprise.[13] Although Parties such as the Small Island Developing States and the EU emphasised at Cancun the importance of agreeing on an overall long-term climate target (*e.g.*, reducing industrialised country emissions by 25-40% by the year 2020), especially the USA (but also countries such as Canada and Japan) opposed such a top-down approach. Important reasons were the preference to take decisions domestically instead of deriving targets from overarching international goals, and perceived lack of meaningful participation by emerging economies such as India, Brazil, and especially China. In addition, several countries made their pledges conditional on the actions proposed by other Parties. For instance, the pledges of several developing countries are conditional on international financial and technical support from industrialised Parties. According to (Falkner, et al., 2010): "little has thus changed in the way in which the major players in climate politics define their interests."

Nevertheless, the Cancun Agreements were considered a success, which was not only because of the successful completion of the session with a set of agreements, but also because it managed to show a new direction for future climate negotiations. Up until 'Copenhagen', negotiations had attempted to formulate an overall GHG emission reduction target, based on science (*i.e.* IPCC) in combination with the precautionary principle of the UNFCCC (UNFCCC, 1992a, p. Art.3.3), with individual country targets. 'Copenhagen' and 'Cancun' had shown that climate policy making may lead to more GHG emission reduction measures if embedded in countries' domestic sustainable development objectives, especially when aiming at actively involving developing countries in global climate policy making.

[12] On 12 November 2014, President Obama, in a meeting with the Chinese President Xi Jinping in Beijing during an APEC summit, announced that the USA would reduce its GHG emissions in 2025 by 26-28% compared to emission levels in 2005. At the same meeting, President Xi announced that Chinese GHG emissions would peak by 2030, to be followed by a decline in GHG emissions. (Vlaskamp & Elshout, 2014).

[13] At COP-19 (Warsaw), the concept of Intended Nationally Determined Contributions was introduced for developed and developing countries to propose voluntarily GHG emission reduction measures, which could take various forms, such as national emission ceilings or technology packages (Earth Negotiations Bulletin, 2013).

For example, the Cancun Agreements contain a decision that developing countries "will take nationally appropriate mitigation actions [NAMAs] in the context of sustainable development, supported and enabled by technology, finance and capacity-building, aimed at achieving a deviation in emissions relative to 'business as usual' emissions in 2020 (UNFCCC, 2011a, pp. 9-10 para. 48)."

This decision illustrated the new line of thinking: developing countries were more willing to reduce their GHG emissions (through NAMAs) if these were in accordance with their sustainable development plans and supported by international transfer of technologies and finance and capacity support. For this, developing countries were also encouraged to develop low-emission development strategies (LEDS) or plans in the context of sustainable development (UNFCCC, 2011a, p. 3 para. 6). With LEDS, countries were encouraged to formulate pathways towards (developing) countries' longer term visions (Gaast & Begg, 2012). A LEDS can become a domestic strategic document that integrates a national climate change policy into a broader framework of development (Clapp, et al., 2010) (Gaast & Begg, 2012). How to formulate NAMAs and LEDS was not further specified by the Cancun Agreements (*i.e.* no methodology was agreed, nor was a mandate given by the COP to any of its bodies to develop a methodology). For the time being, it was left to studies to identify key steps of the process (Clapp, et al., 2010), (World Bank, 2009) and (Project Catalyst, 2009). Finally, 'Cancun' was an important step as it:

- Elaborated on how capacity building and financial support to developing countries could be arranged;
- Offered guidelines for reducing GHG emissions through avoided deforestation and reduced land degradation; and
- Established the Technology Mechanism for support of development and transfer of technologies for mitigation and adaptation to developing countries.

Further decisions on how these capacity, finance, forestry, land-use and technology-related concepts would form a new post-2012 climate policy regime were postponed until the following COPs in Durban (COP-17, South Africa, November – December 2011) and Doha (COP-18, Qatar, December 2012). At these two COPs, it was agreed to extend the Kyoto Protocol with a second commitment period ('Doha Amendment to the Kyoto Protocol' to cover the period between 2012 and 2020) (UNFCCC, 2012a) and to prepare a new climate regime for the period after 2020. The continuation of the Kyoto Protocol was the result of a successful alignment of the positions of the small island states and least developed countries with the EU's support in favour of continuation of 'Kyoto' (the Guardian, 2011). The continued Kyoto Protocol has, however, not been covered by countries such as USA, Canada, Japan and the Russian Federation, so that the countries agreeing on GHG emission reduction pledges jointly represent only 14% of global GHG emissions.[14] Neither has it managed to restore balance in the international carbon markets, which had initially flourished during the early

[14] Of the industrialised countries in Annex B of the Kyoto Protocol (countries with quantified commitments during 2008-2012) only Australia, Belarus, Croatia, EU, Kazakhstan, Liechtenstein, Monaco, Norway, Sweden, Switzerland and Ukraine made pledges for GHG emission reductions by 2020 under the 2012 Doha Amendment to the Kyoto Protocol. Consequently, the group of countries in the amended Annex B of the Kyoto Protocol represent a much smaller share of global GHG emissions (14%) than in the initial Annex B of the protocol as agreed in 1997 (containing almost all industrialised countries of the UNFCCC Annex I), but their representation of global GHG emissions is also smaller than that of the group of countries that pledged mitigation actions after the Copenhagen Climate Conference of 2009 (containing several Annex I as well as large non-Annex I countries) (see section 1.5 above).

stage of the first Kyoto Protocol commitment period but were later characterised by significant oversupply of credits and strongly reduced prices.

Furthermore, at COP-17, the Ad Hoc Working Group on a Durban Platform for Enhanced Action (AWG-DP) was established with the objective to prepare a "protocol, or legal instrument, or agreed outcome with legal force" which covers all negotiating Parties (UNFCCC, 2012b) and which is to come into effect and be implemented from 2020. The envisaged deadline for the AWG-DP is to complete the architecture for the new regime by 2015 (to be agreed at COP-21 in Paris, France). An important element of the AWG-DP mandate is that it shall cover all negotiation Parties, in other words both developed and developing countries. To what extent this implies a breach with the principle of 'common but differentiated responsibilities' remains to be seen, but developments since 'Copenhagen' have shown the strict line between developed and developing Parties no longer exists. This seems to reveal a new paradigm in negotiations. Whereas during earlier negotiations (*e.g.*, Rio 1992 and Kyoto 1997) responsibilities were assigned on the basis of countries' GHG emissions in the past, nowadays responsibilities are also, and increasingly, based on what countries currently emit and what they are expected to emit. As such, it appears that future negotiations will "allow for the reformulation of the meaning of the Convention principle of 'common but differentiated responsibilities' into a spectrum of climate action in light of country-specific development context" (Taminiau, 2011).

1.4. What has been Achieved?

In light of the several negotiation sessions since the early 1990s it is interesting to analyse briefly in this chapter whether and to what extent these have resulted in global reductions of GHG emissions. A first step in this analysis is to look at GHG emissions trends in industrialised countries (grouped in Annex I of the UNFCCC), which are shown in Figure 1-1. The diagram shows that industrialised countries' overall emissions (excl. emissions related to land use, land-use change and forestry activities, LULUCF) decreased by almost 7% in 2000 (compared to 1990) and were 9.3% below 1990 levels in 2011 (UNFCCC, n.d.). From Figure 1-1 it can also be concluded that for industrialised countries which did not belong to the group of formerly centrally-planned economies (countries with economies in transition, EIT), GHG emissions increased during the 1990s by 8.9% in 2000 (above 1990 levels). Therefore, the decrease in GHG emission reduction of all Annex I Parties together during the 1990s has been mainly caused by an emission reduction in EIT countries of 41.5% (between 1990 and 2001).

During the early 2000s, industrialised countries' GHG emissions slightly increased again, both in EIT and non-EIT countries, which this took place despite the entry-into-force of the Kyoto Protocol in 2005. The strongest change in industrialised countries' GHG emissions took place between 2008 and 2011, which has been mainly due to the impacts of the economic recessions and corresponding drop in industrial production. Although this study has not conducted a detailed analysis to disentangle the importance of political, economic and policy interaction factors (*e.g.*, other environmental policies positively or negatively affecting GHG emissions), from Figure 1-1 the impression can be obtained that industrialised countries' GHG emissions have not been very sensitive to UNFCCC and Kyoto Protocol negotiation outcomes, whereas domestic (*e.g.*, disintegration of centrally planned economic

system in Central and Eastern Europe) and international context developments (*e.g.*, financial and economic crisis since 2009) seem to have had much stronger impacts on GHG emissions.

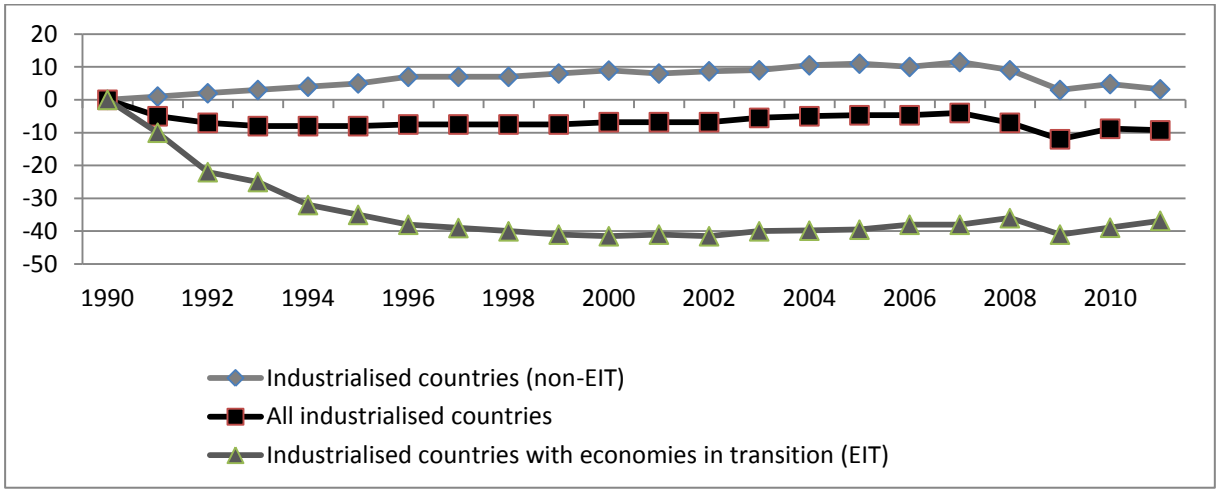


Figure 1-1. Trends in aggregate greenhouse gas emissions, 1990-2011, for industrialised countries (% change of emissions from 1990 levels) (UNFCCC, n.d.)

These conclusions are reinforced by Figure 1-2, which shows percentage changes in GHG emissions for individual industrialised countries during 1990-2012 (UNFCCC, n.d.). For instance, it shows that GHG emissions (excl. land use and forestry-related emissions) in, *e.g.*, Australia rose by 31%, in Spain by 20.1%, in New Zealand by 25.4%, Canada by 18.2%, and in the USA by 4.3%. It also shows how in Germany (-24.8%) and the UK (-25.2%) GHG emissions strongly dropped, which was largely due to domestic circumstances, such as the German unification and the restructuring of the UK energy sector which led to a reduced use of coal in energy production. Also the reduction of GHG emissions in Central and Eastern European countries (as described by the EIT Parties trend in Figure 1-1, due to the disintegration of their centrally planned economies in the early 1990s) is clearly shown in Figure 1-2. Including GHG emission (reductions) caused by LULUCF-related activities changes the above picture in terms of: *e.g.*, 111.4% increase of GHG emissions in New Zealand (25.4% without LULUCF), 42.2% GHG emission increase in Canada (compared to 18.2% without LULUCF) and a 2.4% emission reduction between 1990 and 2011 in Australia due to extra uptake of carbon in forests (UNFCCC, n.d.).

Studies focusing only on CO_2 emissions have shown, among others, that annual growth of global and regional emissions accelerated from an annual rate of 1.1% during 1990-1999 to 3% per year for the 2000-2004 period (Global Carbon Project, sd). Moreover, between 2005 and 2010, global energy-related CO_2 emissions increased by 10%, from 30 to 33 Gigatonnes (Höhne, et al., 2011). It was found that while CO_2 emissions in industrialised countries have reduced due to the recession, in developing countries there has been an increase, although the recession may have slowed down the increase. For instance, China's energy sector CO_2 emission grew during 2005-2010 by over 40%; in India the increase was 45% (Höhne, et al., 2011).

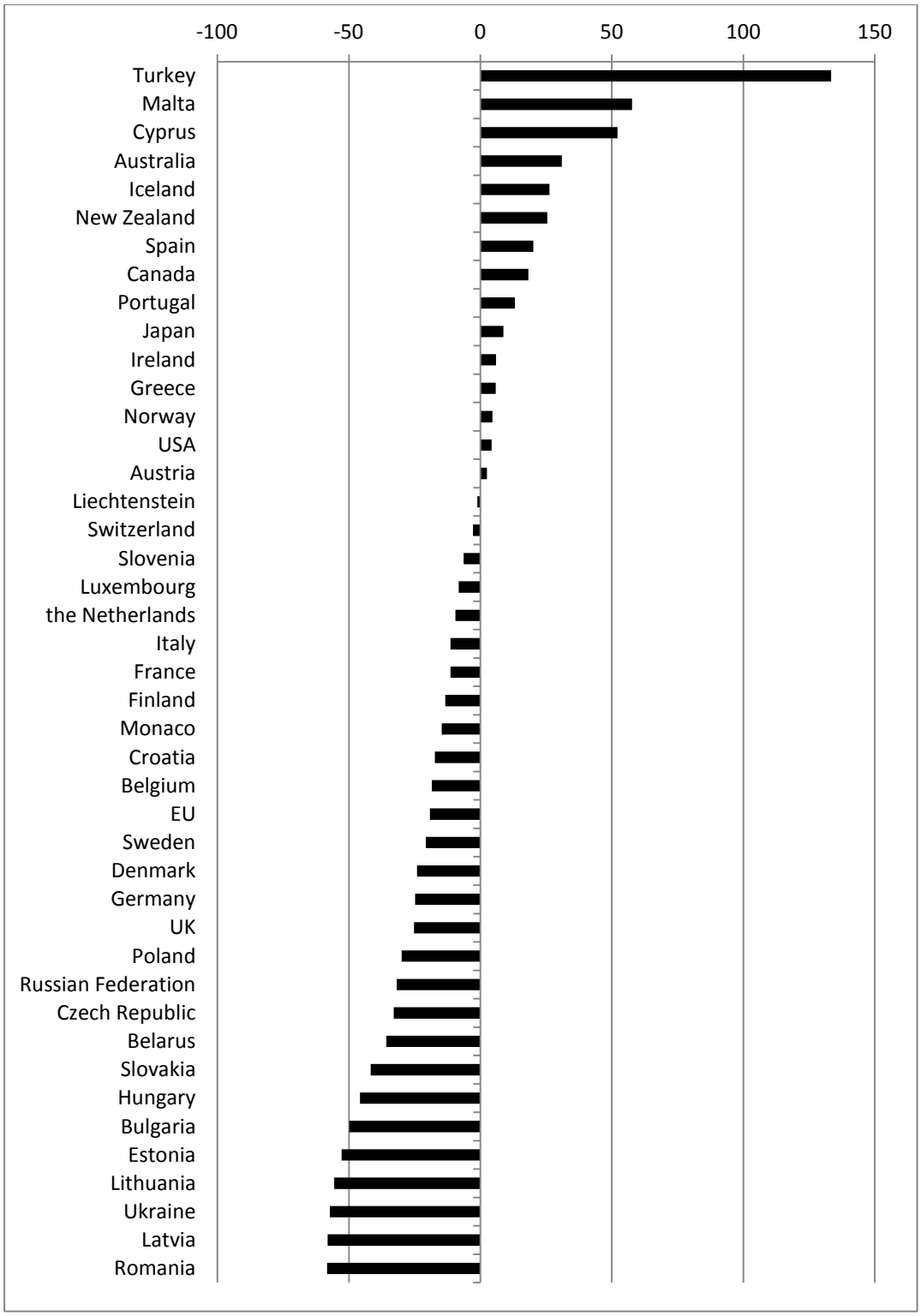


Figure 1-2. Changes in GHG emissions individual Annex I Parties, 1990-2012 (%, excluding emissions caused by land use, land-use change and forestry) (UNFCCC, n.d.)

1.5. Understanding the Dynamics of International Climate Policy Making – Why Climate Negotiations are not Ideal

The above synopsis has briefly outlined how international climate policy negotiations have taken place since the early 1990s. Among the negotiation characteristics, especially during the 1990s, was that GHG emission reduction goals were often subject of negotiations. This was largely due to the initially limited scientific knowledge of how human actions could affect global climate systems. For instance, both the objective to stabilise industrialised countries' GHG emissions between 1990 and 2000 (UNFCCC agreement in 1992) and the goal to collectively reduce their emissions by 5.2% by 2008-2012 (Kyoto Protocol agreement in 1997) were the result of negotiations, rather than that these targets were derived from science as negotiation guidance.

Ideally, although it may be difficult to determine what an ideal negotiation process may look like for addressing international environmental or other issues, negotiations would be supported by a clear identification and description of the (environmental) problem to be addressed with corresponding goals (see, a.o., Fells, 2012, pp. 57-58, Susskind, et al., 2000, and APRAISE, 2012). Second, such goals (such as a quantified goal in terms of required GHG emissions, maximum atmospheric GHG concentration level, or maximum allowable temperature increase) would provide reference points for negotiators and help assess whether and to what extent the course of a negotiation process is in line with the upfront goal(s). Third, for achieving the goal, policy makers use their best available knowledge of the efficacy of policy instruments to decide which instrument(s) to apply, at what scale, within which timeframe, with responsibilities for whom and how to monitor and evaluate the results of the policy package (APRAISE, 2012). Finally, in light of the goals, negotiation parties (*i.e.*, countries) would then agree on forming an international coalition to implement a pathway towards the goal and with clear descriptions of each party's responsibility in the negotiated package.

In this respect, the Montreal Protocol for the phase-out of ozone depleting substances (ODS) could serve as an example of a successful coalition formation process for addressing an international environmental problem. As is explained in Box 1-2, during the 1980s the depletion of the ozone layer became internationally recognised as an important environmental problem with corresponding health impacts. As scientific evidence for the problem became available, a clear problem statement could be formulated which facilitated negotiations on country actions and timetables. Moreover, as explained in Box 1-2, the number of ODS emitting countries was relatively small and alternative technologies were relatively cheap, once operational. Although this comparison is not meant to consider the Montreal Protocol negotiations as easy or 'ideal', they contained several of the above aspects for an 'ideal' negotiation process.

In an international climate policy context, such an 'ideal' situation could exist if scientific research resulted in a clear description of the climate change problem and corresponding damage with related costs, as well as a long term GHG emission reduction target, which countries, through negotiations, could divide among each other in individual country targets. In Figure 1-3, this 'ideal' situation is shown by point A where UNFCCC Parties reach consensus on a climate policy package with which a determined climate target can be reached, *e.g.*, as derived from the best available scientific knowledge (as assessed by, *e.g.*, IPCC).

Box 1-2. Successful policy design through international cooperation under the Montreal Protocol

One example of how building an international coalition with effective compliance was arranged within an international treaty is the 1987 Montreal Protocol (and its 1990 London amendments) for the phase-out of ozone depleting substances (ODS).[15] To a large extent, successful compliance was supported by the availability of relatively cheap ODS substitutes, so that compliance costs could be kept low (Zeeuw, 2001). Moreover, the Montreal Protocol commitments were accompanied by financial assistance to developing countries (through a multilateral fund), availability of technical expertise and dissemination of project lessons within countries and regionally, which also supported compliance. This process was facilitated by the Global Environment Facility (GEF). Finally, countries were able to take specific initiatives to support others to comply.

For example, when the Russian Federation (traditionally responsible for 10% of global ODS emissions) declared that it lacked the financial and technical capability to comply with 'Montreal' by the deadlines of 1994 and 1996, and requested a four-year extension until 2000, the GEF and ten donor countries provided support. The 'Special Initiative for Ozone Depleting Substances Production Closure in the Russian Federation' gathered USD26.2 million, which was used to close ODS production facilities in the seven Russian companies concerned (World Bank, 1999).

Regarding the willingness of countries to participate in and comply with a legally binding agreement, however, compliance with the Montreal Protocol is generally considered much easier to achieve than in the case of a global regime for climate policy. First, substitutes for GHG-intensive fossil fuels (*e.g.*, renewable energy sources such as wind, solar, hydro, and geothermal energy) have been relatively costly (as mentioned above, ODS substitutes were relatively cheap because substitutes were widely available and could be used in a cost-effective manner) (Zeeuw, 2001). Second, during the 1980s the damage to the ozone layer due to the emissions of ODS was considered by society and politicians an extremely serious environmental and health issue, so that benefits from abatement action were clear and supported by scientific evidence. On the other hand, the science behind climate change has long been surrounded by uncertainties, especially concerning the relationship between GHG emissions and atmospheric GHG concentrations, and, subsequently, the impact on the earth's average temperature and the climate (World Bank, 1999) (Zeeuw, 2001) (Barrett, 1991) (Gaast & Begg, 2012).

However, in the practice of climate negotiations since the early 1990s, such an ideal situation has been difficult to realise. IPCC projections in the first assessment reports (Houghton, et al., 1990) (IPCC, 1995) provided indications of how climate change and corresponding climatic impacts may occur due to increasing GHG emissions, but these scenarios were also surrounded by several uncertainties. As a result, early climate change negotiations were limited by a lack of a clear problem description of the climate change issue, so that setting a medium to long term GHG emission reduction goal became a topic of negotiations in itself, rather than that negotiations were guided by scientifically determined goals and targets.

A second reason why climate policy negotiations have deviated from an 'ideal' negotiation pathway is related to game-theoretical aspects of negotiations. Investing in GHG emission reductions may well

[15] Chlorofluorocarbons (CFCs), halons, carbon tetrachloride, and methyl chloroform.

require economic restructuring with accompanying socio-economic costs and addressing questions such as: what would such a restructuring look like, how to balance short-term socio-economic costs with possible longer-term benefits,[16] how would it affect a country's competitiveness and whose further interests are negatively or positively affected (Jackson, 2009) (Gaast & Begg, 2012)? Most countries will generate different answers to these questions due to their different short-, medium- to longer-term development priorities, welfare levels, and perception of the urgency of the climate change issue. Based on that, it can be assumed that the higher the (perceived) costs for countries of a climate policy package, the lower their willingness to support such a package. A particular aspect which could be observed during UNFCCC and Kyoto Protocol negotiations was the choice of policy instruments with some Parties being in favour of legally-binding national quota while others preferred sets of policies and measures determined at the country-level (see Chapter 3 for a more detailed discussion).

In a nutshell, this explains the game-theoretical dilemma of UN climate policy negotiations (see Chapter 2): a climate policy regime with strict emission reduction measures may be supported by few countries only, whereas a globally supported deal is easier to achieve if measures are less strict and costly. This outcome can be explained by the following underlying dynamics of international climate policy making:

- GHGs mix evenly in the atmosphere, which implies that emissions in one country will have an impact across the globe. At the same time, no country can be excluded from the benefits of GHG emission reduction efforts. Based on game theoretical insights, such as 'prisoners' dilemma' or 'tragedy of the commons', one could therefore argue that in the absence of international climate policy cooperation, individual countries may prefer no or limited climate abatement action: *i.e.* a country could refrain from climate actions if it assumes no abatement actions by others, while the country could also decide not to undertake climate action if it assumes GHG emission reduction measures by others from which it cannot be excluded ('free riding') (Posner & Weisbach, 2010). This argument is in line with insights from game theory that if countries would only take their own marginal abatement costs and benefits into consideration, many globally existing abatement opportunities could be missed (Tulkens, 1998). Through a global policy regime, free riding can be better addressed while countries can be supported in achieving benefits from international cooperation that are not feasible without such cooperation.
- In spite of these potential benefits from international cooperation, the effectiveness of a climate regime is generally hampered by the fact that it is based on an agreement between sovereign states without an overarching disciplinary system above them (Cooper, 1999) (Gaast & Begg, 2012). As a consequence, international agreements are largely based on voluntary participation and compliance systems that create sufficient surpluses for states to join the agreement and to remain 'on board'.[17] It is thus essential that international agreements are self-enforcing, which

[16] As the EU Climate Policy Roadmap for 2050 has shown, longer-term economic benefits of an economic restructuring towards a low-emission or even 85% carbon-free society could even be positive due to lower energy cost, stimulating of renewable energy technology producing and service sectors, etc.

[17] For instance, to give an example based on international agreements on development assistance, in 1970 industrialised countries agreed to reserve 0.7% of their annual National Income (GDP) for development assistance to developing countries. In 2004, on average, industrialised countries only spent 0.25% of their GDP for this purpose. Only five countries paid the agreed contribution.

implies that they provide incentives to countries to comply with the agreed commitments (Barrett, 1990), (Barrett, 1995), (McEvoy, 2007), (Zeeuw, 2001), (Tulkens, 1998). Too costly agreements (from the perspective of countries) would then reduce their potential self-enforcement.

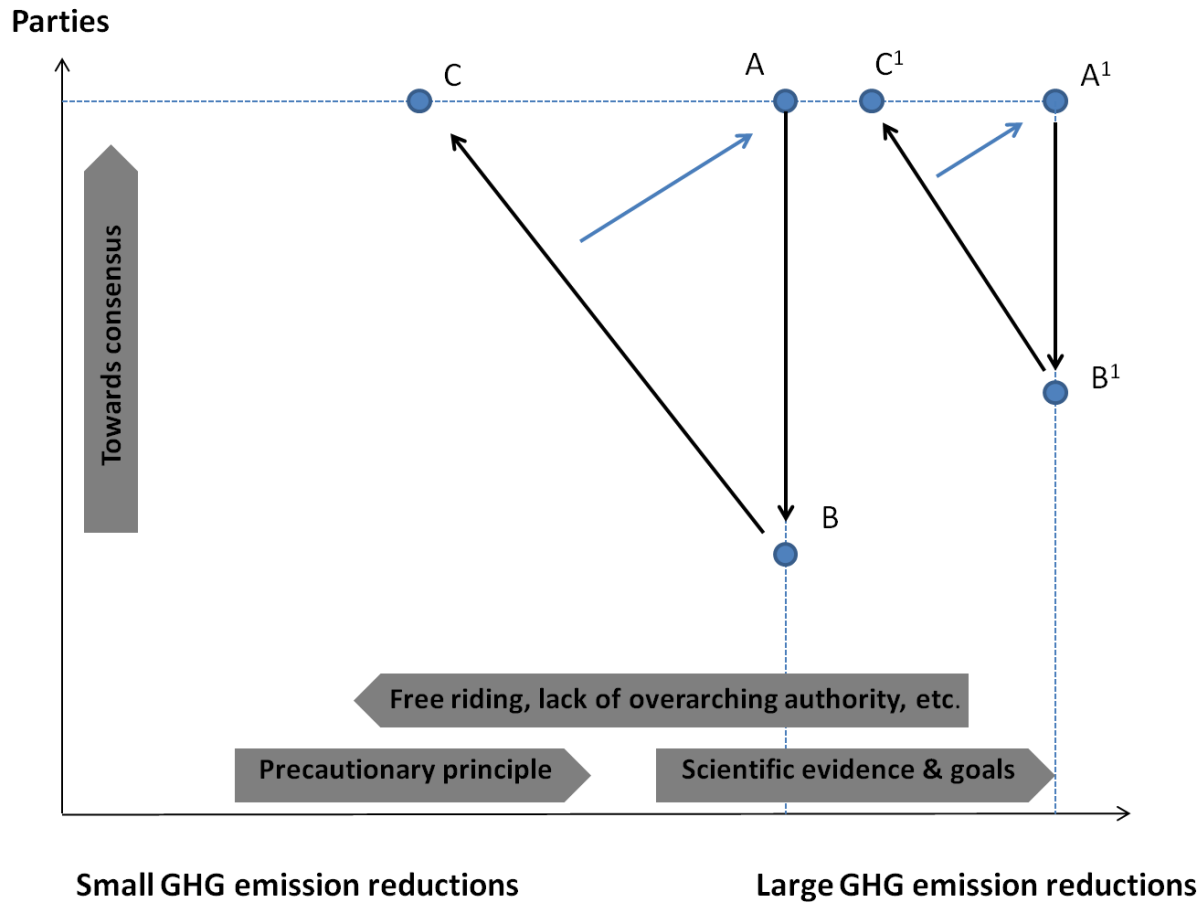


Figure 1-3. Interaction between ambition and participation of Parties in climate negotiations

The above-described aspects of (initial) lack of scientific evidence concerning the climate change issues and game theoretical characteristics of climate change negotiations have generally (since the early 1990s) resulted in negotiated policy packages which deviate from the 'ideal' outcome A in Figure 1-3. Instead, negotiation directions have often been largely guided by two principles covered by (UNFCCC, 1992a): the precautionary principle and the principle of 'common but differentiated responsibilities'. According to the first principle, "Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures" (UNFCCC, 1992a, pp. 9-10, Art. 3.3). In Figure 1-3, the precautionary principle is shown as a driving force for climate policy actions with stronger GHG emission reductions measures.

With the principle of common but differentiated responsibilities, the UNFCCC acknowledges the global nature of climate change and calls for "the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic

conditions" (UNFCCC, 1992a, p. 2). As explained above in this chapter (with more detailed elaborations in Chapter 3), both during the negotiations on the UNFCCC and Kyoto Protocol, this principle could easily lead to a stand-still in negotiations with countries blaming each other for not taking their responsibilities. As a result, Parties could express a lower willingness to adopt GHG emission reduction or limitation targets if other Parties would not undertake such mitigation actions either. In Figure 1-3, this situation is shown by outcome B. During multiple negotiation sessions per year, in order to obtain wider country support, targeted GHG emission reduction measures are scaled down (outcome C).

However, at this point, other countries may find the suggested climate policy measures insufficient so that another negotiation 'twist' is needed to increase policy ambitions while keeping the initially opposing countries on board (outcome D). It must be noted that the distances between A, B, C and D are purely hypothetical, while the processes from A to D in practice are usually not as linear as represented by the straight arrows.

Contrary to the UNFCCC negotiations in 1992 and Kyoto Protocol negotiations in 1997, recent negotiation sessions (after 'Copenhagen' in 2009) have had a much stronger and broader scientific evidence support. For instance, current climate negotiations are fed by scientific insights that average global temperatures should not rise by more than 2ºC above pre-industrial times levels (IPCC 2007) (IPCC, 2013) (UNEP, 2014). In addition, a continuation of GHG emissions growth according to business-as-usual trends could lead to even a 4ºC rise in global temperature by the 2060s (to further increase thereafter) (New, et al., 2011). Accordingly, based on this growing scientific knowledge, the 2ºC temperature increase threshold has become an important negotiation target and was officially included in the Cancun Agreements of 2010 (UNFCCC, 2011a).

As illustrated in Figure 1-3, growing scientific evidence (with the 2ºC goal) could even lead to a higher ambition level for negotiations as it could create a stronger sense of urgency among Parties (outcome A^1) (New, et al., 2011). Although this may have an impact on how Parties play their negotiation 'game' (*e.g.*, Parties may feel a stronger responsibility to address the urgency), the game theoretical dynamics as described above may continue to exist, leading to intermediate outcome B^1 (possibly with more Parties as in outcome B) towards final outcome D^1 (the positioning of D^1 to the right of A is hypothetical, only for the purpose of illustration).

An important challenge that remains, should A or A^1 in Figure 1-3 represent the 2ºC target, is to bring the negotiation outcome from D to A (or D^1 to A^1) (which is the main focus of UNEP, 2014). What such a pathway may look like will be subject of ongoing and future climate negotiations. However, as will be argued in Chapter 7 of this thesis, since the COP sessions of Copenhagen in 2009 and Cancun in 2010, there has been a tendency to focus on embedding actions for mitigation and adaptation more strongly in countries' national socio-economic planning and organising international support for that. The main rationale for this focus is that while a national, quantified target for a country as in the Kyoto Protocol (for industrialised countries) may initially lead to a clearer envisaged policy outcome, reality has shown that such targets are difficult to enforce. In a 'bottom up' approach, as will be explained in Chapter 7, a country could formulate a medium to long term national plan with social, economic and environmental targets which are to be achieved with low GHG emission and climate-resilient (technology) options. Such an embedding of climate measures in socio-economic planning could

provide a stronger stimulus to GHG mitigation and adaptation measures as these would support countries' national green development.

1.6. Scope of the Study and Research Objective

1.6.1. Research questions

From the above it can be concluded that climate policy negotiators face the challenge of achieving a globally supported policy package which is in line with the UNFCCC precautionary principle and recommendations derived from best available scientific knowledge. As explained, this challenge is complicated by the potential trade-off that stricter climate policy measures (higher envisioned GHG emission reductions) with accompanying socio-economic costs may reduce the number of countries willing to join the climate policy coalition. The above synopsis has shown that since the 1980s climate policy makers have spent considerable time on the design and structure of climate policy negotiation packages in order to deal with the game-theoretical negotiation aspects (as introduced above and specified in more detail in Chapter 2), such as limiting free riding and achieving a broad international climate coalition despite the absence of an overarching disciplinarian.

Next to the design (including choice of policy instruments) of a global climate policy to arrive at a successful end result of a negotiations 'game', it is also important that the negotiation process enables taking the steps to move from points A to D via B and C (and from A^1 to D^1 via B^1 and C^1) as in Figure 1-3. Negotiations under the UNFCCC have, for instance, been characterised by attempts to make progress by taking several small steps followed by larger steps when feasible; the resulting agreements, *e.g.*, UNFCCC, Kyoto Protocol and Cancun Agreements, have all been the result of a gradual, multi-year negotiation process with the objective to arrive at an agreement on which Parties can reach consensus.

Moreover, the examples of 'Kyoto' and 'Copenhagen', as described above, have shown that there have been situations where the direction of negotiations was influenced by, a.o.:

- Publication of scientific reports on climate change patterns and their consequences (*e.g.*, (IPCC, 1995),
- Personalities of important negotiators (*e.g.*, US Vice President Gore at Kyoto), the chair of a negotiation process (*e.g.*, the President of a COP session), as well as
- Ability of the UNFCCC secretariat to facilitate negotiation processes (*e.g.*, formulating negotiation texts, preparing background papers, organising expert meetings, *etc*.).

These latter examples illustrate how tactical and facilitating aspects can change the course of negotiations, so that the negotiation process becomes more effective with an improved negotiation result.

Therefore, based on the initial overview and characterisation in this chapter of climate policy making since the early 1990s, as illustrated by the negotiation developments and outcomes in comparison to an 'ideal' situation (as in Figure 1-3), this study formulates as a hypothesis that for successful climate policy negotiations (in terms of climate policy measures leading to lower GHG emissions and

stronger climate resilience about which UNFCCC Parties reach consensus) at the least the following three basic conditions need to be fulfilled:

- The **design and structure** of the negotiation text need to acknowledge and address the diverging positions of negotiating countries, the challenges and complexities of international climate policy making, including game-theoretical aspects and uncertainties regarding scientific information about climate change and its potential impacts on ecosystems;
- The **negotiation process** needs to enable an international coalition of countries to move from one negotiation intermediate outcome to another (*e.g.*, from outcome B to outcome C in Figure 1-3), while enabling Parties to accommodate to changing positions and negotiation directions; and
- **Decisive tactics and facilitative negotiation support** are needed at certain points during the negotiation process to enable changes in the course and/or direction of negotiations, such as at points A, B and C in Figure 1-3, as well as to avoid and/or address negotiation obstacles. Examples of such tactical support are: ability to avoid negotiation sensitivities, ability to change the sequence of addressing negotiation topics, and ability to formulate compromises.

These basic conditions for progressing negotiations are not exhaustive but follow from the discussion in this chapter about how to address game theoretical aspects of climate negotiations, and facilitate implementation of the precautionary principle and principle of 'common but differentiated responsibilities' of the UNFCCC. They can be further characterised as follows:

1. The **design and structure** of the overall policy regime must acknowledge that:
   a. international cooperation can lead to more effective outcomes than individual country actions, as it, among others, helps to avoid free riding behaviour (Tulkens, 1998),
   b. states are sovereign and their national self-interests need to be reflected by the policy agreement, which leads to a tension that proposed GHG emission reduction measures may have to be mitigated in order to keep all countries on board, and
   c. coalition building by groups of countries may be an effective way to have a balanced assessment of countries' varying economic and social backgrounds.

   Part of this condition is that the **policy instruments** applied within this structure need to be efficacious for achieving a desired negotiation goal. For instance, if the negotiations focus on achieving an overall quantified GHG emission reduction target, then an effective instrument could be to divide this target across countries in combination with emissions trading for increased cost-effectiveness (see for instance the result of the Kyoto Protocol in Chapter 3). However, if countries aim at integrating climate policy making in countries' overall sustainable development priorities, then instruments such as technology needs assessments and low-emission development strategies may be more efficacious (as illustrated in Chapter 7).
2. The **process of negotiations** needs to reflect that reaching a global climate deal takes times, that trying to accelerate negotiations may be counterproductive and that taking small steps at a time can be relatively productive. Moreover, the process of negotiations may benefit from relatively general agreements first with detailed modalities and procedures to be worked out at later sessions (such as relatively strict GHG emission reduction goals with compliance arrangements to be decided later or financial contributions for adaptation agreed with payment schedules to be agreed later).

3. **Tactical and facilitating aspects of negotiations**, such as who is the President of the COP and does he or she sufficiently keep in mind the above conditions and does he or she have the personality to bring parties closer together by keeping negotiations plenary or, instead, break these up in negotiation groups when needed. As explained above, an important facilitating factor is the input from science to negotiations, such as IPCC assessment reports or the UNEP Emissions Gap reports (UNEP, 2014), as well as the support from the UNFCCC secretariat in terms of background papers, synthesis reports and draft negotiation texts, *etc*. Another possible facilitating factor for negotiations is the support provided to developing countries, especially the poorer countries which have only small delegations and for which alignment with other negotiation groups can be a relief. Negotiations also require successful balancing of various country group positions (such as Alliance of Small Island States, Africa Group, Umbrella Group, G77+China group, Oil Producing and Exporting Countries group and Environmental Integrity Group), which includes that negotiation outcomes need to reflect their positions (*e.g*., exemption of developing countries from commitments under the Kyoto Protocol, principle of 'common but differentiated responsibilities', inclusion of GHG emissions trading, *etc*.). Finally, availability of general information sources such as newsletters, policy briefs, blogs and project report dissemination can be mentioned as a facilitating factor for negotiations, particularly when they aim at providing balanced information about the pros and cons of politically delicate issues.[18]

These three key conditions are not only important individually, but in particular their combined strength (due to their interrelations) is decisive for the success of climate policy design and implementation. For instance, without the review of adequacy of agreed measures under the UNFCCC in 1995, the Berlin Mandate towards a Kyoto Protocol would have been less likely or even unlikely (see also Chapter 3). Moreover, to give another example, the negotiation process towards 'Copenhagen' (in 2009) showed an increasing agreement on mitigation actions by developing countries too and the establishment of a Green Climate Fund and a Technology Mechanism to support developing countries on climate change mitigation, adaptation and technology transfer. However, the negotiation process at 'Copenhagen' could never build the momentum that characterised the second week of the Kyoto Protocol negotiations in 1997 (failing the third condition). This contributed to the lack of consensus to adopt the Copenhagen Accords.

As a third example, the continuation of the Kyoto Protocol at COP-18 in Doha can be mentioned. In terms of negotiation process and tactics, countries relatively smoothly agreed on the importance of the continuation of the Kyoto Protocol, especially in light of the absence of an alternative policy regime. However, as the design and structure of the continued protocol only contained binding quota for a limited group of countries and did not address the surplus of carbon credits from the 2008-2012 commitment period (failing the first condition), the efficacy of the policy instruments Joint

[18] For example, the newsletter Joint Implementation Quarterly (JIQ) was launched in 1995 by the Netherlands Government to inform policy makers, the business community and knowledge institutes about the latest developments around the concept of Joint Implementation (JI, see Chapter 4) and to provide a balanced reflection of arguments against and in favour of this politically delicate issue during negotiations during 1992-1995. Other examples of such information sources are the Climate and Development Knowledge Network (CDKN, focus on climate policy making and the role of developing countries), CDC Clima (focus on emissions trading through projects and quota trading), Climate_L e-mail list server (operated the International Institute for Sustainable Development) and ClimateTechWiki.org (website with descriptions of technologies for mitigation and adaptation and with country programmes for technology transfer, operated by UNDP).

Implementation (JI) and Clean Development Mechanism (CDM) under the prolonged protocol can be considered low (with a global carbon credit price close to zero).

These examples indicate the importance of meeting the three basic conditions for successful climate policy negotiations simultaneously: *e.g.*, even with a good overall structure and with good support from scientific sources, negotiations may fail if the process does not allow Parties to exchange points of view and bridge gaps between their positions. With a view to these identified basic enabling conditions for successful climate policy making, the first question for this study is:

1. ***To what extent have the three basic conditions be met during the negotiations on the Kyoto Protocol (during 1995 – 1997), its modalities and procedures (during 1997 and 2005), and the Kyoto flexibility mechanisms JI and CDM?***

This question will be answered by analysing a set of policy files which were of key importance for the formulation of the Kyoto Protocol and for the formulation of its modalities and procedures. These files are further introduced in the next section. It is noted that this question focuses on the result of the negotiations for a number of climate policy files addressed in this study; it does not necessarily imply a successful or unsuccessful implementation result of a policy. It is therefore acknowledged that a successful negotiation outcome with, *e.g.*, a package with strict GHG emission reduction or limitation goals, and wide international support, does not guarantee that implementation will be successful and in line with the expectations from negotiations. At the same time, as will be explained in further detail in Chapters 3-7, meeting the three basic condition towards a successful negotiation outcome is likely to enhance the success of policy implementation.

Irrespective of the conclusions from the analysis of the first research question, from the description in Section 1.2 above, it can already be concluded that no agreement was reached (at Copenhagen in 2009) on an extension of the Kyoto Protocol with GHG emission reduction or limitation targets for a broader range of countries (including rapidly growing developing countries). Since then, climate negotiations have diverted from a commitments-with-timetables pathway (as under 'Kyoto') towards a (voluntary) pledge-and-review pathway with an increased focus on supporting developing countries in formulating low-emission development strategies as a basis for nationally appropriated mitigation actions (NAMAs) and national adaptation plans (NAPs).

With a view to this more bottom-up focussed development and considering the answer to research question 1, the second research question in this study then becomes:

2. ***What options can be identified from past negotiations and recent policy developments for meeting the three basic conditions during the negotiation process on a future climate policy regime for the period after 2020, in terms of policy design structure, enabling negotiation process and tactics?***

1.6.2. Negotiation files to be examined for the research

In order to answer the first question, four negotiation files have been selected which illustrate in detail how the overall design and structure of the Kyoto Protocol was developed during a range of negotiation sessions between 1992 and 2012, including: choice of instruments, organisation of the negotiation process, influence of negotiation parties' national policy contexts, impact of personalities

during negotiations and how scientific knowledge has been fed into the negotiations. Therefore, the first file selected for addressing the first question is:

- **The process of establishing the UNFCCC as an overall framework for a climate regime and adopting the Kyoto Protocol**. This file deals with the process of negotiating the UNFCCC, the adoption of the Berlin Mandate, the agreement on the Kyoto Protocol and the negotiation process towards its entry-into-force.

In addition to assessing the three basic conditions for processes at the highest negotiation level of the UNFCCC and the Kyoto Protocol, also negotiation files at the level of individual policy instruments have been identified. The Kyoto Protocol introduced a number of policy instruments that countries could use for achieving the Convention objectives and Kyoto Protocol's quantified emission reduction targets, such as: technology transfer to developing countries, the possibility for industrialised countries to trade their emission quota among each other, the option of counting carbon sequestration in forests and soils against industrialised countries' efforts to comply with Kyoto Protocol targets, and the options for industrialised countries to generate carbon credits through international projects and use these credits for complying with their targets. Of these instruments, the latter was the most intensively negotiated one, especially when it concerned project collaboration and credit trading between industrialised and developing countries (*i.e*. the CDM). While developing countries had no quantified mitigation commitments under the Kyoto Protocol, through the CDM, they could actively become involved in global mitigation actions.

For that reason, the following three files are analysed in this study to explore whether and how the three basic conditions for successful climate policy negotiations were met at the level of negotiating more technical aspects of the Kyoto Protocol. These files are presented in 'descending order' from negotiations on the general concept of project-based emissions trading under the UNFCCC and the Kyoto Protocol (*i.e*. JI and CDM), via negotiations on a broad package of JI and CDM project-related design and operational issues (which largely took place at the level of the COP), towards dealing with aspects related to the accounting of GHG emission reductions of JI and CDM projects (which negotiations mainly took place at the level of the CDM Executive Board, which is a subsidiary body of the COP).

These three files are presented below:

- **The development of the concept of Joint Implementation in the UNFCCC**. The UNFCCC introduced the possibility for industrialised countries to *implement* part of their commitments *jointly* with other countries. This created the possibility to invest in projects in countries where GHG emission reduction costs are relatively low. During 1990-1995, negotiations on JI were extremely sensitive as environmental NGOs and developing country Parties were cautious that JI might delay emission reduction action within industrialised countries. The COP3 negotiations in Kyoto in 1997 extended the JI concept to a global scale. Project cooperation among industrialised countries was still referred to as JI, whereas for project cooperation between industrialised and developing countries the CDM was established. The concepts are similar in the sense that the emission reductions achieved by both JI and CDM can be transferred as GHG abatement credits to Parties with quantified commitments. Investor countries can use these credits for compliance with their Kyoto Protocol targets. The key difference between both concepts is that the CDM has

a dual objective: next to the GHG emission reduction, CDM projects must also contribute to sustainable development in the host countries; JI projects do not have such an explicit sustainable development objective.

- **Dealing with various JI/CDM project-related design issues:** The negotiations following COP3 on JI and CDM modalities and procedures covered several topics which varied from political issues, such as the extent to which JI and CDM projects would be supplemental to industrialised countries' domestic abatement action, to technical issues, such as the calculation of the emission reductions achieved through projects, including an assessment of a project's business-as-usual reference scenario ('baseline'). This file will focus on the latter modalities and procedural issues to explore whether and how also for these technical issues the above conditions for successful negotiation outcome prevail; *e.g.*, strict accounting rules for enhanced environmental integrity may imply fewer credits from JI and CDM projects and therefore lower political acceptance.
- **Dealing with accounting of JI/CDM project GHG emission reductions: determining (multi-) project baselines:** As modalities and procedures were being negotiated in the aftermath of 'Kyoto', particular attention was paid to the whether and how GHG accounting techniques could be standardised. There were two main reasons for raising this issue. First, accounting procedures for JI and CDM projects create transaction costs and it might be cheaper if multiple projects could apply a common accounting methodology. Second, several potential JI and CDM projects were so-called 'greenfield' projects whereby a new installation (*e.g.*, a hydro power plant) was built and connected to a power grid. As for this type of project it is usually difficult to precisely identify what existing (or planned) capacity it replaces, methodologies are needed to calculate average emission levels across the relevant grid. All greenfield projects connected to the grid could subsequently use this average emission factor for its baseline calculations. Also for this file, *a priori* a trade-off could be expected between on the one hand conservative emission factors (with possibly fewer non-additional emission reductions) and on the other hand fewer credits and therefore lower attractiveness of the project options.

The second research question in this study is addressed by analysing the changed direction in climate policy negotiations since COP-9 in Copenhagen with its increased focus on identifying climate change mitigation and adaptation measures in light of countries' economic, social and environmental priorities (with particular attention to transfer of technologies for mitigation and adaptation to developing countries). The negotiation file to be studied for that contains the following two elements:

- **Development and transfer of (technology) options for climate change mitigation and adaptation in light of countries' low-emission and climate-resilient development strategies**. During the Kyoto protocol negotiations, technology transfer as a negotiation topic remained relatively separate from the negotiations on countries' climate mitigation commitments. Technology transfer was only connected to the latter through the low-emission technologies selected in CDM projects. Nonetheless, since 2001, the provision under the UNFCCC to encourage developing countries to conduct technology needs assessments (TNAs) for mitigation and adaptation has developed into a global set of activities with 92 TNAs conducted between 2001 and 2009 and 36 TNAs since 2010 (with support from the Global Environment Facility) (UNFCCC, 2013a). COP18 (Doha, Qatar, December 2012) even decided that TNAs "should be integrated with other related processes under the Convention, including nationally appropriate

mitigation actions, national adaptation plans and low-emission development strategies." (UNFCCC, 2013b, pp. 7 para. 10-13) Through this decision, and with the establishment of a Technology Mechanism under the UNFCCC (UNFCCC, 2011a), technology transfer has become a pillar of climate negotiations.

- **Increased interlinkages between technology, finance and capacity building directions for mitigation and adaptation in international climate policy making:** As explained above, for embedding actions for climate change mitigation and adaptation more strongly in countries' development strategies, a number of provisions can be used such as LEDS, TNAs, NAMAs and NAPs. In this file, possible interlinkages between these provisions are analysed as well as interlinkages with the several climate policy pillars under the Convention, such as: Technology Mechanism, Cancun Adaptation Framework, Capacity Building Framework and Financial Mechanism. In this file, it will also be addressed how meeting the three basic conditions as explained above can support a rationalisation of these current directions in climate policy making by suggesting areas where activities can be integrated so that duplication and wastage of resources can be avoided.

The selection of negotiation files could be criticised on the ground of its seemingly large focus on mitigation and less on adaptation. Although this study acknowledges the importance of adaptation, it has been decided not to select it as a separate negotiation file because at several points in negotiation sessions, mitigation and adaptation measures both become part of one compromise package, *e.g.*, relatively stringent commitments for industrialised countries with flexibility measures and additional support for adaptation measures for developing countries. Moreover, in the file selected for answering the second research question, adaptation and mitigation are treated equally. Therefore, adaptation as a climate policy negotiation topic will be represented throughout the above files.

1.6.3. Structure of the research

Chapter 2 presents a conceptual framework to the research. It provides a background to the three basic conditions for climate negotiation as identified in this chapter (related to the structure and design of a policy, the negotiation process and tactical and facilitating aspects for negotiations).

In Chapters 3 through 6 the four files will be examined for answering the first research question.

Chapters 7 will focus on the answering the second research question with a focus on formulating practical guidance for negotiating a globally supported post-2020 climate policy regime.

Chapter 8 will present conclusions from this study.

Chapter 2. Elaborating Key Conditions for Successful Climate Policy Negotiations

2.1. Introduction

General characteristics of climate policy making have been described in Chapter 1 as an introduction to the analysis in this study. It has been explained how climate negotiations were initially complicated by limited scientific knowledge of climatic impacts caused by human activities, which made it rather difficult to 'precisely' determine required GHG emission reductions for meeting the precautionary principle of the UNFCCC. While the scientific knowledge base has been growing over the past two decades, negotiations have also been complicated by game theoretical aspects such as countries' potential incentives for free riding and lack of an overarching international disciplinary. As a consequence, actual climate policy negotiations have deviated from an 'ideal' negotiation process.

In order to deal with the above aspects, in Chapter 1 it has been argued that successful negotiation outcomes not only depend on the design of the policy package to be negotiated, but also on the extent to which the negotiation process provides sufficient scope for dealing with country positions and interests, as well as on tactical and facilitating aspects. As noted in Chapter 1, the identification of these three basic conditions is not meant to be exhaustive. Instead, they are considered minimally required aspects for achieving a successful international climate policy negotiation result (in terms of agreeing on low-emission and climate-resilient measures on which countries reach consensus).

These basic conditions are further elaborated on in this chapter on the basis of theoretical literature, before analysing in the next chapters whether and how these conditions have been met in different climate policy negotiation files. Their interaction is illustrated in Figure 2-1.

In Section 2.2, aspects related to the **design of a global climate policy** are examined with help of insights on formation of international coalitions (using insights from game theory) where the size of coalitions is determined by the number of the countries for which collaboration is more beneficial than acting outside the coalition. The section discusses how coalition building works in a situation where countries jointly aim at achieving an agreement without an overarching disciplinarian and whether and how trade-off effects take place in such situations between strictness of policy measures and size of the coalition (see for illustration Figure 1-3). With these insights a better understanding can be obtained of how international coalition building dynamics influence the basic structure of an international climate policy regime and the instruments applied within this structure for achieving a desired negotiation goal (*e.g.*, instruments for dividing an overall quantitative goal across countries or instruments to assess possible integration of climate policies in countries' economic, social and environmental priorities) (basic condition 1).

This is followed by a discussion in Section 2.3 of **the process of negotiations** in different negotiation contexts as described in the literature, such as the integrative or cooperative negotiation approach in cases where clear win-win potentials exist in policy making (negotiations enable negotiators to be all better off) and distributive negotiations which could take place in so-called win-lose situations (some negotiators are worse off whereas other are better off). In addition, the process of climate negotiations

under the UNFCCC is explained in detail, by describing both the high-level negotiations process at sessions of the Conference of the Parties (COP) and the more technical negotiations on particular policy issues such as instruments and mechanisms and modalities and procedures for these (basic condition 2).

Finally, Section 2.4 discusses, based on theoretical insights from the literature, how country negotiation positions and tactics emerge from domestic values, interests, institutions and experience. Moreover, it describes, based on climate negotiation experience, a range of **facilitating and negotiation tactics** factors, with examples, that have been observed during climate policy negotiations and how these factors have influenced the direction and scope of the agreements reached and size of the coalition supporting and implementing these (basic condition 3).

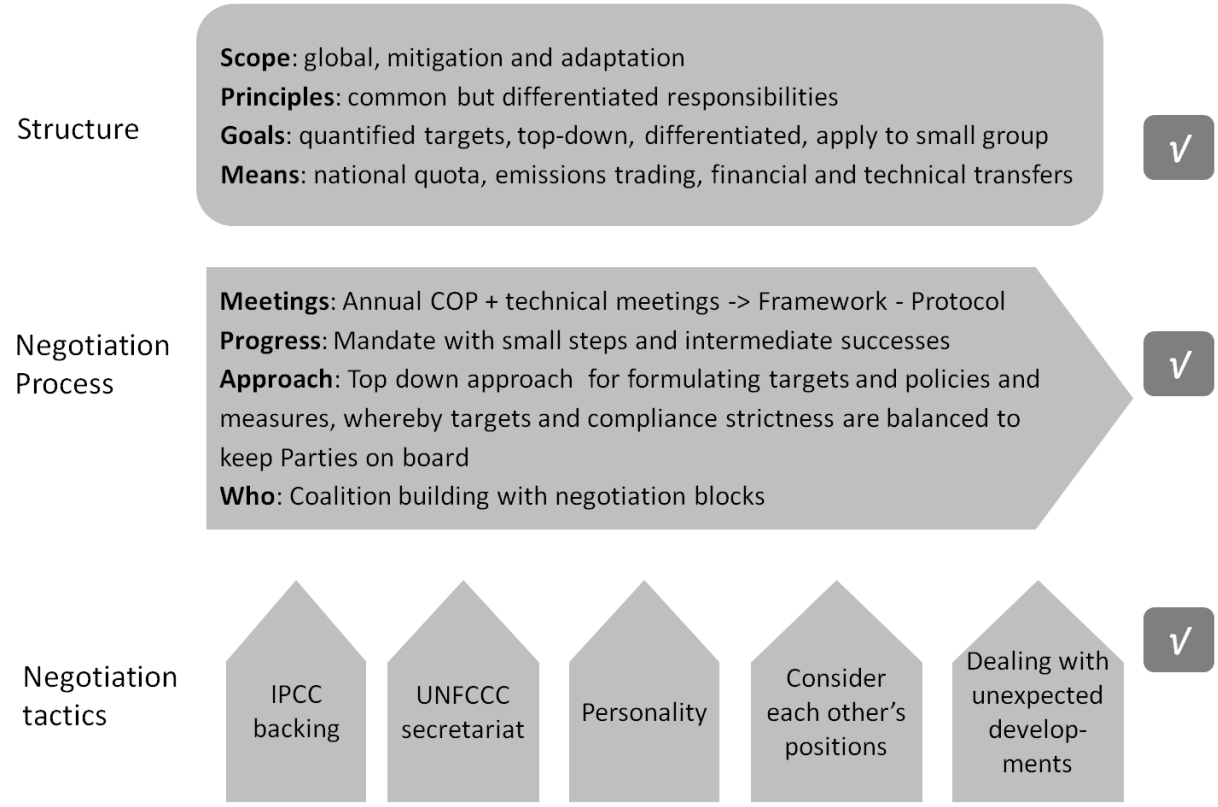


Figure 2-1. The three distinguished basic conditions for success

2.2. Meeting the Condition of a Well-Designed International Climate Policy Regime

2.2.1. Factors determining international cooperation on transboundary issues

As explained in Chapter 1 (Section 1.4), achieving an 'ideal' international climate policy coalition is complicated by a number of aspects which are well understood from literature about game theory. One aspect is the absence of an overarching international disciplinarian. As sovereign states, countries (or groups of countries) balance their benefits and costs of joining such a coalition, which could lead to international climate policy structures with lower GHG emission reduction targets (*i.e.* possibly less

costly for participating countries) in order to acquire a broader international support (Barrett, 1999) (Kiyono & Okuno-Fujiwara, 2004). This possible trade-off between higher or lower targets and country participation in an agreement results in a challenge to design an international climate policy regime which keeps emission reduction measures sufficiently strict for meeting the UNFCCC precautionary principle and stimulates a sufficient number of countries to join the coalition for achieving climate policy goals.

For the latter, for instance, compensatory measures or ways to reduce the costs of compliance could be introduced, which is not only important for making it attractive for countries to join a coalition but also to support their compliance with the agreements and commitments within the coalition. After all, the absence of an overarching disciplinarian also complicates enforcement of compliance with coalition agreements. Of course, not committing to objectives in an international policy regime may cause a loss of goodwill for a country, a complaint in the framework of the International Court of Justice or a sanction, but these 'sanctions' could become difficult to impose and are far from a guarantee that countries will comply with multilateral treaties (Barrett, 1999) (Barton, et al., 2006). In fact, as will be described in Chapter 3, in spite of the US agreement with the Kyoto Protocol in 1997, the country never ratified the protocol. Moreover, to give another example, Canada's ratification of the Kyoto Protocol was followed in 2012 by a unilateral decision by the Canadian government not to comply with its quantified GHG emission reduction commitments under the Protocol. There was little that the international climate policy regime could do to prevent these cases.

At the same time, an important reason for international cooperation on transboundary environmental issues is that it enables countries to reduce costs and achieve larger benefits than in case of unilateral country actions (Barrett, 1991). Collaboration enables countries to explore options for cost reductions, such as through the use of concepts of emissions trading and international division of abatement actions (Jepma, 1995a). This insight is generally supported by game theory, which has been well known since the work by Von Neumann and Morgenstern (Neumann & Morgenstern, 1944). They developed mathematical theories based on games where two or more individuals choose strategies to maximise their benefits in competitive situations.

The individuals are faced with clear rules and it is assumed that they behave fully rationally and that information is exchanged symmetrically among the players in the game. An interesting insight from game theory, which could be relevant for the discussion on climate policy negotiations, is that of the dynamics of so-called non-cooperative games.[19] Non-cooperative in this context refers to situations in which no overarching authority exists to assure that players stick to the agreed rules. Hence, as explained above, cooperation in these games must be self-enforcing.[20] A well-known example of a non-cooperative game is the so-called 'prisoners' dilemma', which explains how players' unilateral optimisations result in outcomes that are worse than the optimisation which would have resulted should players have cooperated (Stanford Encyclopedia of Philosophy, 2009). Key characteristics of the prisoners' dilemma are that both players act rationally; they optimise their decision given their assumption that the other player also acts rationally. Another characteristic of this case is the

[19] Nash formulated this aspect of game theory for the first time during the early 1950s, see among other publications by Nash (Nash, 1996).

[20] Games in which players can enforce contracts through outside parties/authorities are termed cooperative games.

symmetry of information: although the players do not know each other's decisions, they both have the same amount and type of information. Third, the players do not communicate with each other. Should they be able to exchange views on the situation they have been placed in, a different outcome would have been likely in order to create the largest possible common surplus. A fourth characteristic of this game is that there is no repetition. Should the game be repeated in a second round, then each player may make a different choice based on the knowledge of the other player's behaviour in the first round.

It can be argued that decision making on climate change resembles the prisoners' dilemma. Suppose, taking a very stylistic example, that a country has two choices regarding what policy it will undertake concerning climate change: it can take GHG emission reduction measures or it can decide not to take any action. Moreover, there is no international regime and no information exchange among countries, although all countries have access to the same information sources, so that the country will have to assume what other countries will do in terms of climate policy. For the other countries, also two options exist: carry out abatement policy or no climate policy activities at all.

In case the country assumes that the other countries are all likely to carry out GHG emission reduction measures, it has an incentive to undertake no action. After all, by doing nothing the country would benefit from the activities by all other countries at zero costs. Hence, in this case the country could be a free rider, taking profit of the public good created by other countries. On the other hand, if the country assumes that none of the other countries will carry out climate policy measures, it has no incentive to undertake abatement action itself; the benefits from such action would generally be much smaller than the costs, especially when the country is small or medium-sized. This outcome resembles the prisoners' dilemma case: whatever the policy action by other countries, without a cooperative framework, the country's optimal policy is to refrain from abatement action. A repetition of the game in a second round of negotiations could lead to a different outcome, for instance, if it turns out that refraining from abatement action leads to considerable environmental damage and economic costs.

Another extension of the prisoners' dilemma, and which has a high relevance for environmental issues, has become known as the 'tragedy of the commons.' The origin of this concept goes even back to Aristotle ("What is common to the greatest number has the least care bestowed upon it") (Ostrom, 1990) and in more recent scientific literature its roots go back to Hardin (Hardin, 1968). The commons refer to any resource which is shared by a group of people, *e.g.*, air and water, but also land, fish and wood. A general characteristic of commons is that they are not protected by property rights as everybody can freely use the commons.

A problem that could arise with using the commons, and this is where the link to the 'prisoners' dilemma' can be made, is that overuse reduces their quality. For example, the overuse of land in Britain in the fourteenth century (as in Hardin's example) due to the free use of common pastures by nearby villages to graze horses, cattle and sheep, resulted in ruining of the pastures. In order to halt this process, property rights were introduced by parcelling up the common pastures in individually owned parcels. Each household then had a responsibility for its own parcel and an incentive to prevent overgrazing.

The 'tragedy of the commons' is also often used in the context of fishing (too much fishing would deteriorate fish populations) and in the context of air pollution: considering the air as a common, people have emitted pollutants in the air, which has gradually reduced air quality. Based on these examples, the tragedy of the commons can be defined as the result of the perception of people that

using a common results in an individual benefit, whereas the costs of using it can be shared so that they are hardly felt by individuals. As a consequence, up to the point where the 'tragedy of the commons' is truly felt by the users themselves, there is little incentive to adjust behaviour in terms of *e.g.*, reduction of emissions of pollutants.

This makes the 'tragedy of the commons' helpful in describing the issue of global warming and why it is taking place and why it could become a problem (Böhringer, 2002) (Paavola, 2011). It does also offer some solutions to address the problem (internalising the costs of emissions in individual cost calculations, *e.g.*, with a Pigovian tax, or translating emissions into individual property rights), but its value to the discussion of what an optimal size of a stable climate coalition would be is limited. The concept of 'public goods' is more useful for that purpose.

Although interrelated, the 'tragedy of the commons' and the 'public goods' concepts are different in the sense that the first concept refers to the over-use of a common good, whereas a public good is a good from which no-one can be excluded. In the example of global warming, a 'tragedy of the commons' takes place when worldwide emissions of GHGs lead to climate change; the reduction of GHG emissions and the prevention of global warming would then be a public good. Especially, the public good characteristic of climate change policy has turned out to be important when designing a climate regime. This is mainly because of the free-rider incentive that countries may have when they see that others are active with abatement policies whereas no country can be excluded from the improved circumstances. In conclusion, a climate regime aims at preventing a 'tragedy of the commons' situation for the global climate, but must be designed so as to prevent free rider behaviour due to the public good character of the formulated policy.

The above discussion has shown that insights from game theory help explain why climate policy negotiation outcomes, in an attempt to reach consensus among UNFCCC Parties (see Figure 1-3), often result in lower GHG emission reduction targets than in an 'ideal' situation (as illustrated in Chapter 1). Within the eventually achieved coalition, countries try to achieve the best outcomes for themselves individually and, depending on the negotiation case, for the 'group' (*e.g.*, the global climate). How this game has been played so far by countries in the context of establishing a climate regime will be discussed in the next chapter based on experience with UNFCCC and Kyoto Protocol negotiations.

2.2.2. How is the size of a coalition for international policy making determined?

Based on the discussion in Chapter 1 and above, the process of establishing and maintaining an international climate regime faces the challenge that a truly effective climate policy regime must have a widespread international coverage because the emissions by countries outside the regime would have an impact on the well-being of the countries under the regime. Similar to the illustration by the prisoners' dilemma example, in the context of climate change, policy cooperation between countries could generate larger benefits than unilateral actions. For instance, within a framework of cooperation, countries with relatively high marginal GHG abatement costs could carry out emission reductions in countries where marginal costs are relatively low (as the impact of GHG emissions is independent of the location where the emissions take place). This would not only reduce overall abatement costs but also increase overall benefits as new sustainable energy technologies become available in countries

where they would not have been available otherwise. Countries could also agree on differentiated targets and/or commitments based on socio-economic welfare levels. In addition, within a framework of cooperation, countries could agree on financial and technology transfers or specific support measures to reduce costs of and increase benefits from cooperation.

For instance, the UNFCCC contained, as a first international climate policy step, promises by industrialised countries to bring their GHG emissions back to 1990 levels by the year 2000. This coalition was not difficult to maintain as almost all (groups of) negotiating parties were satisfied: most industrialised countries were pleased by the fact that the stabilisation goal was not legally binding; developing countries did not have quantitative targets at all. The Kyoto Protocol in 1997 also achieved global support, but this coalition could only be achieved by exempting developing countries from quantitative emission reduction commitments and enabling industrialised countries to partly achieve their commitments through international emissions trading mechanisms. For example, as will be explained in detail in Chapter 3, in return for its willingness at 'Kyoto' to join the group of countries with quantitative commitments, the Russian Federation received compensation in the form of a relatively easy target (*i.e.* stabilisation of its GHG emissions at l990 levels, when the country was still part of the USSR). US negotiators, who had been given a mandate by the Congress to only agree on a stabilisation of US emissions (Byrd & Hagel, 1997), felt that the inclusion in the Kyoto Protocol of the concept of emissions trading (basically on a worldwide scale) would be enough compensation for the 7% emission reduction target they agreed for their country (on which they soon turned out to be wrong, though).

As benefits from GHG emission reduction have the characteristic of a global public good, as explained above, no country can be excluded from these. By not joining or leaving a coalition (or even not becoming part of it, see below), a country could benefit from the actions undertaken by the coalition without undertaking actions itself. This could induce other countries also to withdraw from the coalition, thus threatening the overall objectives of the regime. Literature on game theory then suggests that international agreements, given the enforcement complexities, must be self-enforcing, *i.e.* the agreement must be designed in such a manner that the incentives for countries to stay in the coalition are larger than the incentives to leave the coalition (Neumann & Morgenstern, 1944) (Barrett, 1991) (Zeeuw, 2001) (Tulkens, 1998) (Eyckmans & Finus, 2003) (Ray, 2000).[21] This could imply that participating countries are compensated for their efforts (costs) and receive a share of the benefits that result from the cooperation (Zeeuw, 2001) (Altamirano-Cabrera & Finus, 2006, p. 25). As a result, all participating countries are better off by staying a member of the coalition.

An important question that remains is how large an international climate policy coalition would need to be. In theory, since no country can be excluded from enjoying the benefits of GHG emission reduction (*e.g.*, lower adaptation costs), a climate coalition would have to be global. This would prevent any country from taking a free ride on the GHG abatement efforts of other countries or countries feeling their efforts being offset by lack of action by others. However, whether this practically means that all countries would have to join the coalition of countries undertaking abatement actions remains to be seen. For instance, an effective and stable coalition with countries

[21] It must be noted that applying the theory of coalition building to climate change policy is complicated by the complexity of determining marginal benefits and costs of policy action. For instance, calculating costs and benefits from climate abatement actions is surrounded by several complexities and uncertainties (IPCC, 2001, pp. 200, Working Group I). In addition, the benefits and costs differ across countries.

with commitments may not need to contain all countries in the world but mainly the key players: "the success of an international environmental agreement is not related to the total number of participants, but to the number of key players for tackling the problem – in the case of global warming USA, China, Russia (FSU) and India, among others" (Altamirano-Cabrera & Finus, 2006, p. 27).

Strictly speaking, the Kyoto Protocol, while ratified by 192 Parties (191 countries and the EU) (UNFCCC, 2014a), was largely built on the coalition of 37 Parties with quantified emission reduction measures with compensating measures for countries that undertake emission reduction efforts (access to low-cost investment options through international emissions trading[22]) and financial and technological transfers to developing countries (UNFCCC, 1998)

What a coalition with "key players for tackling the problem" (Altamirano-Cabrera & Finus, 2006) could look like was illustrated in 2009 by the World Resources Institute (WRI, 2009) in a diagram which plotted countries from left to right according to their absolute annual GHG emissions (based on 2005 data and updated from Herzog, et al. (2005). The analysis showed that, in 2005, the 15 UNFCCC Parties (both developed and developing countries) with the largest GHG emissions together, taking the EU as one Party, accounted for approximately 80% of global emissions.

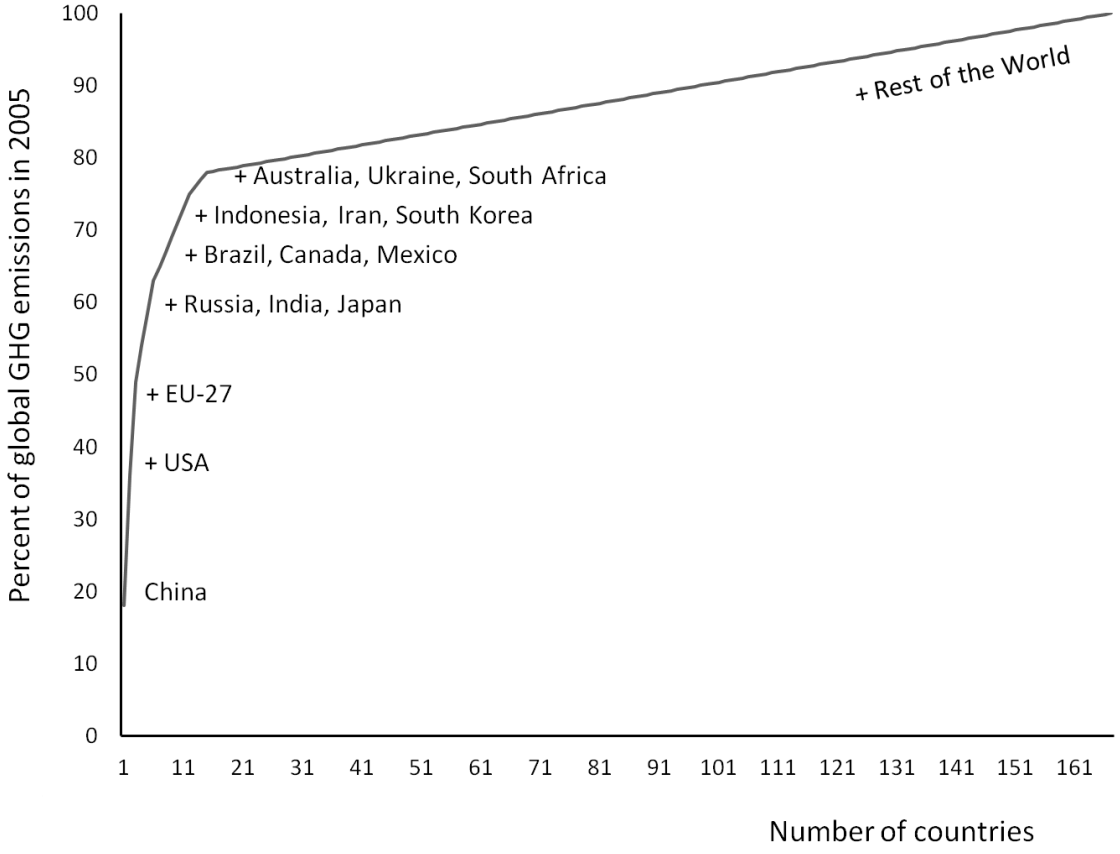


Figure 2-2. Cumulative global GHG emissions in 2005 (WRI, 2009).

[22] International trade of emission reduction titles could broaden small stable coalitions; the challenge is to "design a sufficiently 'clever' transfer scheme such that it ensures the largest possible stable coalition." (Altamirano-Cabrera & Finus, 2006, p. 27)

Obviously, the above analysis (WRI, 2009) was not hindered by political negotiation barriers, but, as explained in Chapter 1, a few months after the climate negotiations at 'Copenhagen' 55 countries, including a number of developing countries, had submitted national pledges to the UNFCCC secretariat to cut and limit their GHG emissions by 2020,[23] together accounting for 78% of global emissions from energy use (which is different from the diagram in Figure 2-2 which has a broader basis of GHG emissions, including energy, national transportation and industrial production).

These examples show that while climate policy making has a global scope due to the uniform mixing of GHGs in the atmosphere with climate impacts for all countries (to a larger or lesser extent), negotiations and literature analysis up to 2009 tended to focus on international coalition building with quantitative GHG emission reduction actions for relatively small groups of countries with relatively large GHG emissions. Countries within such a coalition could then still collaborate with other (developing) countries on CDM emission reduction projects, climate change adaptation support and technology transfer.

The above could be an indication of the increasing importance of 'sub-games' by major GHG emitting countries within the overall UNFCCC negotiation context. However, it remains uncertain as of yet what coalition building will look like towards a post-2020 climate policy to be concluded by 2015 (as per the 2011 'Durban Platform for Enhanced Action' and the 2012 'Doha Climate Gateway') (UNFCCC, 2012b) (UNFCCC, 2012d)(UNFCCC, 2013b). The practice of the Kyoto Protocol, as described in Chapter 1, has shown that the effectiveness of a coalition with industrialised countries adopting quantified, legally binding commitments, including the possibility of emissions trading, was threatened without the inclusion of rapidly growing developing countries such as Brazil, China, India and Mexico. The absence of these countries was an important reason for the USA to leave the 'Kyoto' coalition in 2001. Attempts to establish an effective coalition under a post-Kyoto regime with inclusion of developing countries with rapidly growing GHG emissions have thus far resulted in mainly voluntary emission reduction or limitation pledges. In a study by UNEP, it has been argued that these pledged actions together are likely to be less than what is required for stabilising GHGs around a level of 450 ppmv in the longer term in order to reach the goal that average global temperature increase should not be more than 2^{o}C, compared to pre-industrialised times temperature levels (UNEP, 2014). The 'Doha Amendment to the Kyoto Protocol' has achieved limited success given the relatively small country coverage and voluntary nature of commitments. At the same time, since 'Copenhagen' in 2009, a number of non-Annex I Parties with relatively high GHG emissions have agreed on emission reduction pledges, while these were not in the Kyoto Protocol list of Parties with quantified emission reduction or limitation commitments.

During the negotiations since 'Copenhagen', there has been a trend to increasingly consider climate change mitigation and adaptation actions in light of countries' economic, environmental and social priorities. The emerging concepts of nationally appropriate mitigation actions (NAMAs) and national adaptation plans (NAPs) to be identified and conducted in developing countries as part of low-emission development strategies (LEDS) (UNFCCC, 2011a, pp. 7-11), with financial and technical support from developed countries, are examples of this trend. These concepts aim at supporting

[23] Among these pledges was the EU target of 20% emission reduction by 2020 as well as a number of individual EU Member State pledges. Therefore, the number of Parties with pledges after 'Copenhagen' is larger than the number of states listed in under the 80% level in Figure 2-2.

countries in identifying their longer term sustainability priorities (as a long term vision) and subsequently formulating a strategy towards those priorities with low GHG emissions and increased climate resilience. It was also agreed at 'Cancun' in 2010 that support from developed to developing countries for NAMA, NAP and LEDS formulation and implementation can be combined with procedures for monitoring, reporting and verification of the supported actions (UNFCCC, 2011a).

As a potential result of this trend, with a climate policy regime focussing more on embedding climate change mitigation and adaptation actions in countries' national sustainable development and/or growth visions, the chances of a larger coalition (with lower importance of 'sub-games') seem to have increased in comparison with the first commitment period of the Kyoto Protocol with its legally binding emission reduction or limitation commitments. This trend with its potential positive impact on climate policy coalition building during negotiations on a post-2020 climate policy package will be further elaborated on in Chapter 7.

2.3. Meeting the Condition of an Effective Climate Policy Negotiation Processes

Section 2.2 has characterised the context of climate policy making with help of game-theoretical and economic concepts such as 'prisoners' dilemma', 'tragedy of the commons' and the 'public good' nature of GHG emission reduction benefits. In addition, basic characteristics of coalition building around climate change have been discussed in light of the absence of an overarching disciplinarian. With these insights a better understanding has been obtained of those factors which could prevent a negotiation outcome to be close to the 'ideal' situation of strict GHG emission reduction measures and globally supported international coalition of countries under the UNFCCC and which should be considered in the design of a negotiated policy package (basic condition 1). Furthermore, for successful climate policy negotiations, this study has identified the condition of an enabling negotiation process which helps negotiators to consider the above game-theoretical aspects in the policy design during climate negotiations. How the condition of an enabling climate negotiation process can be fulfilled is described in this section with a specific focus on a number of elements that drive the climate policy negotiation process itself, such as negotiation setting, context, individual country interests, and particular circumstances.

2.3.1. Integrated versus distributive negotiations

The literature distinguishes two main approaches to negotiations (Fisher & Ury, 2011) (Nierenberg, 1978) (Wertheim, n.d.) (Sprangler, 2012) (Meerts & Postma, 2005). The first approach is called 'integrative' or 'cooperative' and is recommended in circumstances where clear potentials for *win-win* situations exist. The second approach is called 'distributive negotiations' and is generally applied in so-called *win-lose* situations where parties have to compete with each other because of strongly differing interests (*e.g.*, a customer negotiating the price of a product with the potential seller). The outcome of distributive negotiations is generally referred to as a zero-sum game – one party wins what

the other one loses – although also *lose-lose* outcomes are possible if a party realises that it cannot win and cancels the negotiations.

In cases of 'integrative' (*win-win*) negotiation circumstances, negotiations would be focussed more on striking creative deals which could result in negotiation outcomes where for each party the advantageous aspects outweigh the disadvantageous aspects. A typical characteristic of 'integrative' negotiation circumstances is that there are resources available that can be divided among the negotiation parties (*e.g.*, a party that loses on one issue can be compensated by winning on another issue), so that both parties can benefit from negotiations. Awareness of such a situation among the negotiation parties creates an incentive for both sides to strive for maximisation of the joint outcome. These circumstances also make it easier for parties to solve mutual problems, to share information, and to prevent decentralised behaviour with a focus on individual optimisation (Barrett, 1999, p. 2).

Of the approaches described here, the 'integrative/cooperative' negotiation approach has the largest potential of offering a way out of the 'prisoners' dilemma' situations described in Section 2.2, as it limits or prevents decentralised action (Barrett, 1999, p. 3). An important key to 'integrative' negotiations is to orient oneself to the interest of the opponent so that mutually satisfactory solutions can be found. Such an approach generally increases the flexibility of parties to find compromises that do not conflict with one's own interests. This could even lead to 'Pareto efficient' outcome whereby no options remain on the table that could make at least one party better off without making the other parties worse off (Wertheim, n.d., p. 12).

The Kyoto Protocol negotiations in 1997 (as discussed in Chapter 3) could be considered an example of how an initially 'distributive' negotiation approach turned towards an 'integrative' approach. During the first week of the 'Kyoto' negotiations countries were unwilling to give in, but this changed during the second week when industrialised countries were eventually willing to unilaterally accept stricter quantitative emission reductions because their developing country negotiation partners had agreed on the eligibility of a system of quota-based international emissions trading and the establishment of the CDM for emissions-trading projects between industrialised and developing countries. Both these emissions-trading mechanisms offered considerable scope for industrialised countries to fulfil their commitments in a cost-effective way. As a result, the 'Kyoto' negotiations could be completed successfully, because the protocol text reflected the national priorities of the several countries, such as "binding targets for the EU, flexibility for the U.S., success in Kyoto for Japan, no commitments for developing countries, financial pay-off for Russia, and good terms with the EU for Eastern Europe" (Wijen & Zoeteman, 2004, p. 31).

Finally, some authors have concluded that the 'integrative/cooperative' negotiation approach is often used in negotiations on conflict solving issues where the parties involved have or need an on-going relationship with each other (Fisher & Ury, 2011) (Wertheim, n.d.).[24] Several negotiations, in particular on transboundary issues, take place as a series of subsequent rather than isolated events. Therefore, it is important that negotiators take into consideration that they will meet again at future negotiation rounds. For example, in the context of the World Trade Organisation (WTO), negotiations

[24] It must be noted that a strict distinction between 'integrative/cooperative' and 'distributive/competitive' not necessarily has to exist in practice and parties, although aiming at a long-term cooperation and acting with an incentive to strive for a win-win outcome, could still to some extent try to introduce some elements of competitive negotiation in the talks (Wertheim, n.d., pp. 2-3) (Barrett, 1999, p. 2).

could last for several years (*e.g.*, Kennedy round, Uruguay round, Doha round). Such negotiations could be better considered as a process for which it is important to keep in mind that the negotiation atmosphere during one negotiation step may have an impact on the atmosphere in the next step, *i.e.* parties may harden their position if another party formerly did not want to co-operate, or show willingness to compromise if former negotiations resulted in a true win-win situation (Fisher & Ury, 2011).

With a view to the climate change talks, this negotiation aspect can be illustrated by the opposition of developing countries, prior to the COP-1 (Berlin, 1995), to JI as an official instrument for helping industrialised countries stabilising their GHG emissions by the year 2000 at 1990 emission levels. As will be explained in Chapter 4, this opposition was strongly motivated by developing countries' lack of confidence in industrialised countries' efforts or even intentions to really stabilise their emissions. However, simply rejecting the JI option in Berlin would likely have frustrated climate negotiations for the next couple of years, which were focussed on developing a climate protocol with quantified commitments for industrialised countries to be concluded at 'Kyoto'. At COP-1, the majority of the countries realised that such commitments would hardly be feasible without an emissions-trading instrument such as JI. Therefore, with a view to the continuation of the climate negotiation progress, a pilot phase for JI called activities implemented jointly was established (see also Chapter 4).

With a view to these examples and assuming on-going relationships between the negotiation parties in most of the cases, Wertheim (n.d.) concludes that "the key to successful negotiations is to shift the situation to a 'win-win' even if it looks like a 'win-lose' situation. Almost all negotiations have at least some elements of win-win. Successful negotiations often depend on finding the win-win aspects in any situation" (Wertheim, n.d., p. 2).

2.3.2. Organisation of climate negotiations under the UNFCCC

Since the early 1990s, climate negotiations under the UNFCCC have taken place during multiple 'rounds' as described in Chapter 1. Initially, the Intergovernmental Negotiation Committee (INC) was the main negotiation forum which prepared the text of the UNFCCC that was adopted at UNCED (1992) and which continued until the first Conference of the Parties (COP) in Berlin (Germany, March-April 1995). Since then, the COP, established by the (UNFCCC, 1992a, p. Art.7), has been the central body for international climate negotiations. The COP is hosted annually during two week-sessions, usually by the end of the year, by either a developed or a developing country. Generally, countries try to apply the 'rule' that when a COP is hosted by a developed country in one year, then the next year a developing country will host the session. The ground rules for the process of negotiations within the context of the UNFCCC, as further explained in this section, have been determined by (UNFCCC, 1992a). In the course of ongoing negotiations, additional bodies with their accompanying operational rules have been added to the UNFCCC organisational structure, such as the Ad-Hoc Group on the Berlin Mandate (1995-1997), the CDM Executive Board and the Adaptation Fund Board. These bodies receive their mandates from the COP, which also appoints their governing boards. The boards determine their operational processes and report annually to the COP.

Between 1995 and 1997, COP negotiations focussed on the Berlin Mandate to agree on a protocol with further specific (quantified) climate policy actions. After the conclusion on the Kyoto Protocol in

1997, negotiations focussed on its modalities and procedures for successful implementation of protocol agreements. An important role in this process was played by the Subsidiary Body for Scientific and Technical Support and Advise (SBSTA) of the Subsidiary Body for Implementation (SBI). These two bodies support the COP negotiation process and negotiators meet usually twice a year for these discussions, during spring (May-June) and during the first week of the COP by the end of the year. As per November 2014, 40 SBSTA and 40 SBI sessions have been held in total.

In 2005, when the Kyoto Protocol formally entered into force, after receipt of the Russian instrument of ratification in November 1994, two new negotiation tracks were established under the COP which had the objective to work on a post-2012 climate agreement (to cover the period after the first commitment period of the Kyoto Protocol, UNFCCC 2005, Montreal COP). The first track was conducted by UNFCCC Parties under the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA) and the second track organised negotiations by Kyoto Protocol Parties under the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP). As explained in the climate negotiations synopsis in Chapter 1, the reason for having two working groups for negotiations on a post-2012 agreement was that, by 2005, not all UNFCCC Parties had ratified the Kyoto Protocol (including the USA). As post-2012 agreements would formally take the form of a second commitment period under the Kyoto Protocol, limiting the negotiations to protocol Parties only would exclude non-ratifying Parties from post-2012 negotiation. Eventually, it was hoped that both working group tracks would come together by 2012.

As discussed in Chapter 1, the Copenhagen COP session (COP-15) failed at reaching a climate agreement as successor of the Kyoto Protocol first commitment period, so that at Durban (COP-17) a new platform was established for negotiating a climate policy regime by 2015, which would need to become effective after 2020. At COP-18 in Doha (December 2012) work on this Durban Platform for Enhanced Action was started and the work on the AWG-LCA and AWG KP formally concluded. During this overall negotiation process of over 100 meetings, several milestones were achieved, which are summarised in Table 2-1 for COP sessions.

In terms of milestones, COP-1, COP-3, COP-4, COP-6*bis*, COP-7, COP-11, COP-13, COP-15, COP-16 and COP-17 turned out to be the most important sessions. Most of the other COPs became 'intermediate' sessions, which was also often a consequence of the time schedules agreed at earlier COPs. The Berlin Mandate of 1995, for example, had a deadline for 1997, which implied that COP-2 would mainly have to create the momentum to keep negotiations on track. COP-4 delivered a working agenda to help countries implement the Kyoto Protocol in their national climate policies; the deadline for the completion of this agenda became COP-6 in 2000. COP-6 therefore became a key session as it was basically the first time since 1997 that Parties had to handle politically sensitive issues. The Dutch Presidency did not manage to conclude negotiations successfully but reached agreement with the Parties to continue negotiations within six months (COP-6 *bis*). COP-7 managed to reach agreement on a comprehensive set of modalities and procedures for the Kyoto Protocol. COP-8 and 9 were overshadowed by the uncertainty about the status of the Kyoto Protocol as the withdrawal of the USA and the doubts of the Russian Federation about the treaty made the entry into force of the Protocol highly uncertain. Only at COP-10 it was certain that enough Parties (including the Russian Federation) would have ratified the Kyoto Protocol, so that negotiators decided to move their attention to the post-2012 commitment periods. COP-13 (at Bali) decided on an action plan for negotiations towards a post-

2012 agreement to be achieved at COP-15 (Copenhagen). COP-16 became of crucial importance after the failure of 'Copenhagen' as it managed to keep the process in motion and change the course of actions towards stronger embedding of climate actions in countries' economic, social and environmental priorities. COP-17 formalised a new negotiation process towards post-2020 climate policy making.

Table 2-1. COP sessions held and their milestones

COP	Location	Milestones
COP-1 (March-April 1995)	Berlin, Germany	• Berlin mandate to start negotiations on a Climate Protocol • AIJ pilot phase
COP-2 (July 1996)	Geneva, Switzerland	• USA agrees to negotiate legally-binding targets • Geneva Declaration
COP-3 (December 1997)	Kyoto, Japan	Kyoto Protocol
COP-4 (November 1998)	Buenos Aires, Argentina	Buenos Aires Plan of Action
COP-5 (November 1999)	Bonn, Germany	Self-imposed deadline for Kyoto Protocol entry-into-force by the time of Rio+10 summit in 2002
COP-6 (November 2000)	The Hague, The Netherlands	President's Note based on topic-wise agreements
COP-6-bis (June 2001)	Bonn, Germany	Bonn Agreement
COP-7 (November 2001)	Marrakech, Morocco	Marrakech Accords
COP-8 (November 2002)	New Delhi, India	New Delhi Statement on adaptation and future climate policy regime
COP-9 (December 2003)	Milan, Italy	Role of sinks in Kyoto Protocol further defined
COP-10 (December 2004)	Buenos Aires, Argentina	Start of post-2012 negotiations
COP-11 (December 2005)	Montreal, Canada	First meeting of Kyoto Protocol Parties, establishment of AWG LCA and AWG KP.
COP-12 (November 2006)	Nairobi, Kenya	Nairobi Work Programme on impacts, vulnerability and adaptation to climate change
COP-13 (December 2007)	Bali, Indonesia	The Bali Road Map
COP-14 (December 2008)	Poznan, Poland	Poznan Strategic Programme on Technology Transfer
COP-15 (December 2009)	Copenhagen, Denmark	Copenhagen Accords (not adopted by consensus decision)
COP-16 (December 2010)	Cancun, Mexico	The Cancun Agreements
COP-17 (December 2011)	Durban, South Africa	Durban Platform for Enhanced Action
COP-18 (December 2012)	Doha, Qatar	Doha Climate Gateway and Doha Amendment to Kyoto Protocol
COP-19 (November 2013)	Warsaw, Poland	Decisions towards a universal agreement in December 2015; to enter into force in 2020
COP-20 (December 2014)	Lima, Peru	

The sequence of annual 'milestone' and 'intermediate' COP sessions have turned out to allow for a flexible negotiation process in the sense that topics can be placed on the agenda of a COP which have been identified at an earlier COP and/or by a preparatory meeting. COP practice shows that identification of issues is usually initiated by one or more Parties at a COP discussion, which is then

considered for further consideration, either by the same COP session, or a next COP session or by a subsidiary body. This generally supports addressing more flexibly the game theoretical aspects as explained in Chapters 1 and 2 and handling the issue that climate policy target setting has often been part of climate policy negotiations, rather than that negotiators were guided by scientifically determined targets.

Countries that have ratified the UNFCCC have access to the COP negotiations. Since the entry-into-force of the Kyoto Protocol on 16 February 2005, which was 90 days after the submission of the instrument of ratification by the Russian Federation, the COP has also served as the meeting of the Parties (COP-MOP) that have ratified the Kyoto Protocol. AWG-KP negotiations, as mentioned above, therefore took place under supervision of the COP-MOP. The implication of this change is that countries that have ratified the UNFCCC but which had not (yet) ratified the Kyoto Protocol (*e.g.*, USA and, until May 2009, Turkey) could only participate at COP-MOP sessions as observers, without the right to vote, upon invitation of the COP-MOP President (generally the Minister for the Environment of the hosting country).

As explained above, the sessions of the COP are prepared and supported by the so-called Subsidiary Bodies (SB) and Ad-hoc working groups (see above for some example). These sessions have a lower political profile (in terms of media coverage), although they are at times important for the progress with negotiations. At SB and Ad-hoc working group sessions, negotiations take place somewhat 'in the shadow' with less of the pressure to achieve agreements which is often so strongly felt at COPs. It is also important to note that the sessions are not pressurised with the necessity to gain political prestige from hosting the sessions. Contrary to the COP, the annual stand-alone climate negotiation sessions are held in Bonn and organised by the UNFCCC secretariat, mostly in May/June. SB sessions are also held in conjunction with the COP for the final preparations of the eventual COP decisions.

Decision-making by the COP takes place according to a procedure that has never officially been adopted. Before the first session of the COP in 1995, the UNFCCC Secretariat had prepared a voting procedure upon which Parties could not reach agreement (UNFCCC, 1996a) (Depledge, 2004). As a consequence, "in the absence of any specified majority voting rule, there is currently a broad understanding in the climate change regime that substantive decisions should be adopted *by consensus"* (Depledge, 2004, p. 5). More recent amendments to the UNFCCC state that the COP should make every effort to reach agreement by consensus, but where consensus cannot be reached, amendments to the UNFCCC and Kyoto Protocol may be adopted by a three-quarter majority vote of the Parties present and voting (Siegele, 2013).

At this point, the President of the COP must ensure that two-third of the Parties are present at the meeting. However, this still requires a definition of what consensus means. In the context of the climate negotiations, consensus is generally achieved if there are no stated objections to a decision. The complication of consensus as a guiding principle for voting is that any Party can block decisions and that additional efforts are needed to adjust the decision text in such a way that it meets the concerns of the Party or Parties that have stated objections. This happened, for instance, at the 'Copenhagen' COP in 2009 when Bolivia rejected the Copenhagen Accords, so that it was not adopted. However, when a similar situation occurred at COP-16 in Cancun, a year later, during AWG LCA negotiations, "Colombia questioned how not having any agreement could be beneficial for the

environment and, supported by Gabon, noted that consensus did not mean that one country could block decisions" (Earth Negotiations Bulletin, 2010, p. 12).

In order to avoid situations where decisions are blocked by a small group of Parties, the COP President establishes small informal working groups (or 'joint contact groups', or 'negotiating groups', or 'drafting groups') to prepare decisions on particular topics during the COP. These groups consist of experts that form a fair representation of the UNFCCC regions, *i.e.* Africa, Asia, Central and Eastern Europe, Latin America and the Caribbean, and Western Europe and others, including Australia, Canada, New Zealand and USA. They are often chaired by a co-Chair from an Annex I country and a co-Chair from a non-Annex I country. Generally, when an informal working group has reached agreement on a particular issue and the decision text is presented to the COP plenary, consensus can more easily be reached.

In this process the SB sessions held in parallel with the COP play an important role (especially during the first week of the COP). The informal working group members have often already formed a similar working group at the annual stand-alone SB and Ad-hoc Working Group sessions in Bonn where country representatives prepare first drafts of decision texts, which often have the form of consolidated texts based on proposals submitted by Parties. At the COP, these consolidated texts can be further developed into COP decision texts, such as Chair Texts or President Notes which become subject to the consensus 'voting' procedure. It should be noted that negotiations do often not take place at the plenary meetings of the COP. The working groups, preferably with a balanced geographical division and specific competence, work on the texts and when they have completed their work and have reached agreement, these can be presented for conclusion to the Plenary of the COP.

The negotiations are furthermore supported by technical workshops organised by the UNFCCC secretariat in between of the stand-alone SB and Ad-hoc Working Group sessions and resumed sessions at the COP on issues that need further exploration by country representatives in consultation with third-party experts, who are invited to these workshops. In addition, as a result of the Copenhagen-Cancun-Durban COP cycle (2009-2011) new bodies have been established to work on technology development and transfer (Technology Mechanism), finance (Green Climate Fund) and adaptation (Adaptation Fund Board). These bodies are also populated by representatives of developed and developing countries and meet a few times a year at Bonn (Gaast & Begg, 2012).

While preparing for the COP, its President often identifies the issues that could 'break or make' the COP. In order to already sort out some of the issues before the COP, its President can organise a small workshop with key players, about two months before the COP session. These key players are, for instance, the EU troika, the main negotiators of important industrialised countries, the acting chair of the G-77&China, a representative of the Alliance of Small Island States (AOSIS), *etc*. This meeting generally offers a good opportunity for the President to show his/her "charm, cunning, humour, daring and a range of other techniques" (Depledge, 2004, p. 6) that later may help to generate consensus at the COP. In addition, several COP Presidents in the past formed so-called 'friends of the President' groups, which are small gatherings of selected negotiators to support the President in preparing the negotiations, identifying key issues during the negotiations, and drafting compromise texts during the final stage of the COP sessions (at this stage also some ministers attending the Ministerial or high-level segment of the COP – generally the last two days of the session – could join the 'friends' group).

Obviously, inviting country representatives to the groups is a very delicate task for the President to perform as it requires a politically sensitive selection of key countries. One option to select negotiators is to select from each UN region one representative, so that all regions are represented. Another option, which is nowadays mostly used by COP Presidents, is to invite one representative from the various negotiation coalitions that have been active in the course of the climate negotiations over the past 20 years (see for an overview Box 2-1).

Box 2-1. Groupings of UNFCCC Parties during climate negotiations

According to the UN tradition, Parties, while they are each represented by national delegations, are organised in five regional groups, mainly for administrative reasons:

- African States,
- Asian States,
- Eastern European States,
- Latin American and the Caribbean States, and
- Western European and Other States (*e.g.*, including EU, Australia, Norway, Switzerland and USA).

In order to have their substantive interests better presented at negotiations, Parties usually organise themselves in 'like-minded' groups. According to the UNFCCC website, the main groups are:

- Group of 77 (**G-77**), which was founded in 1964 and has nowadays over 130 developing country members; China generally collaborates with G-77 so that the group's inputs to the COP are usually tabled as G-77&China submissions,
- Alliance of Small Island States (**AOSIS**), which is a coalition of 43 low-lying and small island countries (which are mostly also member of the G77&China group),
- Least Developed Countries (**LDC**), which contains of 50 countries and which share a common interest in, *e.g.*, vulnerability and adaptation to climate change,
- European Union (**EU**), which as a regional economic integration organisation has become a Party to the UNFCCC itself,
- **Umbrella Group**, which is loose coalition of non-EU developed countries, and
- Environmental Integrity Group (**EIG**), which comprises Mexico, Liechtenstein, Monaco, the Republic of Korea and Switzerland.

In addition, there are several other groups, such as OPEC (Organisation of Petroleum Exporting Countries), CACAM (Central Asia, Caucasus and Moldova), BASIC (Brazil, South Africa, India and China), and COMIFAC (Central African Forestry Commission).

Source: (UNFCCC, 2014c)

An example of using the latter option was at COP-6 *bis* in Bonn (June 2001) which was chaired by the Dutch Minister of Environment, Mr Jan Pronk. He had already intended to establish a negotiation table system with key negotiators selected from these groups at COP-6 in November 2000, but then it was met with too much resistance, as within the groups it was difficult to appoint a 'leading country'. At the Bonn COP session, Mr Pronk tried again and this time a negotiation table could be formed with one chair per group to be taken by a spokesperson who was backed by a number of colleagues from the same group sitting on chairs behind him/her. Perhaps also the changed negotiation climate facilitated this set-up of the 'friends' group. After all, since the decision by US President Bush to consider the Kyoto Protocol fatally flawed, the remaining countries had become engaged in an intense diplomatic carousel with representatives from negotiation groups visiting each other in order to design

strategies to save the Protocol at the resumed session of COP-6 in Bonn. Since the successful application of the 'friends of the President' formula at COP-6*bis*, it has also been applied by other COP Presidents, although not always with similar successes. The 'friends' groups do not always manage to step beyond political dividing lines, so that, during the final hours of the COP sessions, the President still needs to negotiate bilaterally with particular negotiators to strike final deals (Depledge, 2004, p. 22).

Finally, the COP sessions acquire an extra political dimension through the participation of ministers or high-level officials from the Parties in the concluding phase of the negotiations. The influence of ministers on the final outcome differs from case to case. Sometimes, ministers or high-level officials create a breakthrough in negotiations because their political power goes beyond the mandate of the official negotiators. The speech delivered by US Vice-President Al Gore in 1997 at COP-3 is seen as a good example of this effect. However, ministers could also hamper negotiations in cases where they try to strike deals by negotiating on issues, whereas official negotiators tend to incorporate political sensitivities, which they are generally well aware of in the texts they draft. It is without doubt that the high-level segment adds more prestige to the COP, but its contribution to reaching agreement is not always decisive.

2.4. Meeting the Condition of Decisive Tactical and Facilitating Factors during Negotiations

This section addresses basic condition 3, with a particular focus on how and why for agreements on globally supported GHG emissions reduction measures (basic condition 1) there needs to be scope for tactics and making tactical manoeuvres, so that, in terms of Figure 1-3 in Chapter 1, the course of negotiations can change at points A, B and C or A^1 and B^1 and C^1 in Figure 1-3. With a view to that, first, the section focuses on possible (domestic) drivers for Parties' positions and negotiation tactics, which is followed by an identification of tactical and facilitating factors which can, each in their own way, determine the course of negotiations and whether, when and how negotiation breakthroughs can be achieved.

2.4.1. Reflection of national interests in countries' negotiation positions

In Section 2.2 it has been concluded that countries have an incentive to join a climate policy regime if their share in the regime's surplus is sufficiently large to outweigh the costs of participation. The term 'share' is rather abstract though and it generally consists of the benefits that accrue to countries when joining a climate regime. However, what is actually perceived as a benefit typically depends on the country concerned. Some countries may take into consideration all benefits to the national economy, whereas other countries only look at the benefits that accrue to powerful interest groups. Still other countries may take a more altruistic approach and consider a slowdown of global warming, the protection of ecosystems and the prevention of damage to vulnerable countries important benefits. Similar definition issues arise when assessing costs of joining a global climate regime, *e.g.*, should

costs be defined on a national level or only for key interest groups and assessed with a view to the short term or to the medium to longer term.

The process of determining what share a country would need from the surplus of a climate regime before being willing to join is an important determinant of a country's negotiation position. A number of theories have tried to formalise how a domestic interplay between a government and interest groups, a country's perception of international norms and values, and domestic institutional structures add up to the negotiation position of the country (Cass, 2002) (Heck, et al., 2004).

For instance, when determining their desired share in a coalition's surplus, countries could consider the *absolute* gains of joining an international treaty or the *relative* gains vis-à-vis other countries. In the first viewpoint, often referred to as 'neo-liberalism', a country does not necessarily look at how other countries gain or lose, as long as it gains itself. According to the second viewpoint, 'neo-realism', a focus on relative gains is justified by countries' traditional focus on the division of power between states and it identifies security, safety and prosperity as key elements for the positions that countries take at international negotiations. The most important objective of a country is to maintain its relative power vis-à-vis other countries and cooperation is generally based on defensive arguments, *i.e.* a country is willing to join an international policy regime if it feels that their security, safety and prosperity (or one or more of these factors) are threatened and that the coalition can improve this situation. The key actors in the neo-realism tradition are states and only little attention is paid to the behaviour and interests of individuals and private groups within countries (Cass, 2002) (Heck, et al., 2004).

Whereas neo-realists consider domestic interests as exogenous variables in modelling countries' position taking, neo-liberalists believe that over time awareness among domestic institutions and interest groups of potential costs and benefits to other states may increase and influence their positions. The neo-liberal school sees a possibly positive impact of negotiations on the evolution of domestic interest groups.

Other theoretical approaches, such as 'social constructivism', focus on how a national negotiation position is influenced by opinions, expectations, and perceptions in their domestic social context. An important element that constructivist theories add to the theories mentioned above is an explanation of how the behaviour of states may be influenced by ideational interests, next to material goals such as economic prosperity, safety and security. This leads to a fundamental difference with neo-realist and neo-liberal theories (Heck, et al., 2004): whereas neo-realists and neo-liberals consider state behaviour as egocentric in the sense that states take international positions to protect their own well-being, social-constructivists believe that also 'soft' elements such as political culture, history, perceptions regarding identity, norms, well-being of other states and population groups play an important role in the formulation of national and international policies by countries. For example, "one of the core principles of German environmental policy is the *Vorzage Prinzip* or the precautionary principle" (Cass, 2002). According to this principle, it is better to take action to prevent environmental damage, rather than to wait until the damage occurs and to take measures then (UNFCCC, 1992a). Therefore, as also explained in Chapter 1 and Figure 1-3, the precautionary principle is both aimed at preventing damage and saving adaptation costs, even when the projections of environmental damage are surrounded by uncertainties.

In the view of social constructivists, collective mental constructions such as ideologies, countries' perceptions with respect to cooperative and non-cooperative international players, and countries' self-esteem are also important elements to take into consideration when explaining the position taken by countries in international cooperation contexts, next to economic well-being, safety and security. In this respect, also country private and public actors' experience with policy concepts can become a factor in formulating a country's policy position. For example, in the USA, there has been a decade's long tradition of emissions trading schemes whereby polluters face emission quota (maximum amount of allowable pollution) but which also enable trading of quota surpluses and deficits among polluters. At negotiation sessions on the Kyoto Protocol during 1995-1997, US negotiators repetitively argued in favour of international emissions trading as a policy tool to increase the cost-effectiveness of an international GHG abatement policy. Several EU Member States, such as Germany and the Netherlands, referring to their domestic experience, focussed more on voluntary agreements with industries, which allowed polluting companies sufficient freedom to achieve energy efficiency improvements and GHG emissions reduction targets in their own way. Only in 2002, the European Commission started to adopt emissions trading as a key tool to achieve EU Kyoto Protocol targets.

Next to theoretical insights on motivations for countries to take negotiation positions (absolute versus relative gains and whether and how a negotiation position is based on opinion, expectations, ideals and perceptions in the country context), other theories also offer insights on how a negotiation position can be formed through a country's institutional characteristics. According to 'material and institutional liberalism' theories, the central actors in society are individuals and private groups that rationally pursue their private interests, which are subsequently reflected in the policy making at the level of the state (Cass, 2002)**.** An important aspect in this process is how micro-level interests eventually culminate into a national policy. For instance, if from a macro perspective a certain national policy position were optimal, there may still be individual interest groups that wish to prevent the position if it would be harmful for them.

The extent to which these groups are able to do so depends on a number of institutional issues. For example, the election system with proportional parliamentary representation provided a larger scope for the German environmental party, the 'Grünnen', than the UK and US district election systems did (Cass, 2002, p. 10). The latter systems tend to provide scope for larger 'catch all' parties which consider environmental protection as one of the several items on their political agenda. Moreover, the division of power between the Parliament and the cabinet of ministers or the President of a country could be an important factor for the formulation of the eventual negotiation position. It is noted that 'material and institutional liberalism' theories pay less attention to the possible effects of a country's position on other states (similar to 'neo liberalism' as discussed above).

From the above description of categories of theories it can be concluded that the position of countries in international debates and negotiations can be influenced by a range of factors, for which each country may have different weights. It is outside the scope of this study to analyse in detail how national procedures culminate in country positions at international climate negotiations, but for a good understanding of how climate negotiations develop it is useful to take into consideration how and why domestic decision-making institutions and procedures influence the positions of countries at international negotiations. Therefore, when analysing the climate negotiation files introduced in Chapter 1, the study will explore to

what extent negotiations on a global climate regime are influenced by the following key elements, derived from the categories of theories described in this section:

- **National cost-benefit analysis –** To what extent do countries make national cost-benefit analyses in a narrow sense by balancing present and future costs and economic benefits using market discount factors ('narrow' in this context implies that only costs and benefits to the country itself are taken into account)? In case the benefits are larger than the costs of joining a regime, a country may have a strong incentive to join.
- **Cost-benefit analysis by interest groups –** Do particular interest groups within a country dominate the international negotiation position of the country? In this context, it is the cost-benefit analysis of the interest group that determines the national negotiation position.
- **Domestic institutional structures –** To what extent is the negotiation position on environmental issues stimulated or hampered by domestic institutional structures, *e.g.*, election system, division of power between Parliament and President and/or Cabinet of Ministers, justification of policy to domestic judiciaries?
- **International context –** What is the influence of international norms, opinions, expectations and perceptions on the position taken by a country at international negotiations?
- **National principles and concepts –** To what extent do countries aim at promoting domestically preferred policy principles and concepts at international negotiations, *e.g.*, precautionary principle, market-based instruments, voluntary agreements, or command-and-control measures?

In conclusion, determining which 'share' of the surplus from a climate regime countries would need for joining the regime is not at all straightforward and differs across countries. As explained in this section, some countries may let their participation in a climate coalition depend on a cost-benefit analysis in a narrow sense by balancing present and future costs and economic benefits using market discount factors. Other countries may use a broader assessment by also taking into consideration the damage from climate change that may occur to other countries or to ecosystems in terms of loss of biodiversity. Countries may base their positions on what other countries do (including perceptions), or what they believe that other countries expect them to do. Countries could also place the issue of climate change in the context of other international issues and aim at 'package deals' and/or realise that the position taken in the climate debate may have an impact on their benefits under other international treaties and agreements. Finally, countries could use international negotiations as an opportunity to emphasise their national identity or image, *e.g.*, as a country with a long tradition in underlining international solidarity or, on the contrary, as a country that has the power to follow an independent course of action.

2.4.2. Particular facilitating negotiation factors for effective climate policy making

In addition to the context in which negotiations take place (win-win or win-lose) and the extent to which national, domestic interests and priorities are reflected in negotiation positions, negotiations and their eventual outcomes also depend on several factors that are related to the circumstances under which negotiations take place, the personality of the negotiators, whether the negotiation is a stand-alone process or a step in an on-going process, whether all negotiators have clear upfront targets, *etc*.

These tactical factors are briefly described below and illustrated with anecdotes taken from past climate change negotiation sessions.

Upfront negotiation target

According to (Wertheim, n.d.), "too many negotiations fail because people are so worried about being taken advantage of that they forget their needs." This could make parties decide to break off or complicate negotiations, even if a reasonable deal is about to be closed, because they are reluctant to accept any deal due to their fear that they will be taken advantage of and lose. Such situations could be prevented if negotiators clearly explore *a priori* what would be a fair and reasonable deal and what would be minimally acceptable (Fisher & Ury, 2011).

The negotiations at the COP-6 meeting in The Hague (November 2000), described in Chapter 5, provide some anecdotic evidence of such a situation. After two weeks of intense negotiations, COP-6 President Pronk presented his so-called President's Note which contained compromises on all the crunch issues that had remained on the agenda. This Note brought the negotiations close to an end and when US negotiator Loy and UK Minister Prescott proposed a final agreement on the hottest issue (carbon sequestration in agricultural soils), which addressed the concerns of the EU on this issue, the COP meeting was about to be closed successfully. However, at the last minute, the EU rejected the deal in the person of its main negotiator, French Minister Dominique Voyner, because she was not convinced about the environmental integrity of the US-UK proposal. According to Mr Prescott, Ms Voyner "got cold feet. She was exhausted and tired and could not understand the detail" (Oakley, 2001).

The extent to which people/countries are separated from issues

In the view of (Fisher & Ury, 2011), negotiations should be on issues and best take place in a rational, goal-oriented frame of mind. It is therefore critical to separate people or countries from the issues during negotiations. Parties that exchange person/country-oriented, emotional arguments run a considerable risk that the real issues are overlooked (Wertheim, n.d., p. 4). In the context of climate negotiations, during 1991-1995, negotiations were largely focussed on distrust among groups of countries with respect to each other's willingness to effectively tackle climate change. For instance, developing countries repeatedly held industrialised countries responsible for the global warming issue and felt reluctant to allow Annex I Parties to comply with their GHG emission reduction commitments through low-cost JI projects abroad. Instead, developing countries insisted on industrialised countries taking significant abatement action domestically. This attitude created an atmosphere, as explained in Chapter 3, with irritation among some industrialised countries and with a threat by the USA to boycott UNCED.

Mandates for negotiators given by their governments

Mandates for negotiators given by their governments, which formulate their scope of manoeuvre, could create considerable barriers during negotiations, especially if the mandate of one negotiator is in conflict with that/those of other negotiators. In such cases, negotiators can decide to move on and try to find creative solutions to bring negotiations to an end. This often requires strong personalities and

considerable experience of the negotiators. After all, if the negotiation outcome differs largely from the mandate, there may be little chance that the national policy institutions (government, parliament) will approve it. This is an issue that negotiators should keep in mind during the sessions. If they only focus on their own mandate and insufficiently care about the extent to which the mandates of other negotiators are taken into consideration, they may win the negotiations but eventually lose the treaty, because the other countries will not ratify the outcome.

Overstepping mandates does not always have to be a problem as long as the negotiators have valid arguments to explain 'back home' how this happened. A reason for overstepping is often that the mandates are generally based on estimates of what negotiations may look like. At negotiations, the position of countries can change, conflicting proposals creatively combined, and new, unexpected proposals tabled. What is important in the end is that negotiators are able to judge whether the proposed negotiation outcome package is acceptable for the countries they represent.

For example, the US negotiators at Kyoto (1997) clearly made a wrong judgement when they believed that the Kyoto Protocol package with emissions trading among industrialised countries and CDM cooperation with developing countries weighed sufficiently against the 7% emission reduction target for the USA without corresponding commitments for key developing countries. This package largely deviated from the negotiation mandate given by the administration (*e.g.*, Byrd-Hagel resolution of 1997). On the other hand, the Brazilian negotiators rightly concluded that the establishment of the CDM would eventually have the same outcome in terms of supporting sustainable development in non-Annex I countries as the clean development fund based on sanctions as initially proposed by the Government of Brazil (Matsuo, 2003). The outcome of the CDM as a market mechanism under the Kyoto Protocol could thus be considered to remain within the mandate of the Brazilian negotiators.

Impact of groups other than official negotiators

Country delegations at climate negotiation sessions consist on average of between five and ten members, which implies that at each session in total between 1000 and 2000 country delegates negotiate on a climate regime (Depledge, 2004). Nevertheless, the sessions are generally attended by many more people: in the order of magnitude of 4,000 to over 10,000; next to official negotiators also several other organisations are admitted to the sessions, such as: non-governmental organisations (NGOs) in the areas of environmental protection, business and industry, research, and religious groups, local governments, indigenous people, as well as media representatives. Many of these groups consider the sessions as a dynamic meeting point for information exchange, whereas others try to lobby for their particular interests with negotiators.

Their influence on negotiations is generally difficult to identify and depends on which issue is at stake. Although the influence of NGOs on climate negotiations during the sessions seems fairly limited (Arts, 1998), business lobbies and environmental organisations may have an influence on the preparations of countries' negotiation positions and mandates during the months preceding the climate negotiations.

Set up of the negotiation session

Negotiations are often more effective if they take place in smaller working groups per topic instead of in large plenary sessions (see also Section 2.3.2). The small groups consist of issue specialists and communication can be less formal and more direct than in a plenary. At COP sessions, negotiations largely take place in technical working groups with specialists from a number of country delegations. The working groups are always established with a balanced representation from Annex I and non-Annex I countries. These groups prepare negotiation texts for presentation to and approval by the COP plenary.

Time pressure and exhaustion

Regularly, international negotiations between countries (*e.g.*, under the UN or WTO) are characterised by negotiations around the clock on the last day of the session. In this final phase, working groups draft decision texts on particular issues, ministers or other high-level country delegates negotiate outstanding issues, 'friends of the President' groups are formed to facilitate more informal talks, *etc.* Lack of time to complete negotiations could lead to unexpected outcomes where Parties suddenly give in because they do not want to be blamed for the failure of the negotiations. Or, on the contrary, a lack of time could make Parties reluctant to accept a proposed deal, which would in principle meet the conditions for a win-win case, simply because negotiators have insufficient time to carefully judge the proposal. The climate talks have shown examples of both effects: the Kyoto 1997 talks were under a time pressure, because several exhausted delegates had to catch their planes (especially delegates from developing countries who often had cheap, fixed tickets (Depledge, 2004, p. 24)) and, although not all legal texts had been discussed in a plenary meeting, the protocol text was adopted; the COP-6 talks failed in November 2000, because the EU negotiator was not convinced that the last-minute proposal for a deal adequately covered the EU concerns (see above).

Another problem that may arise in this phase is that exhaustion of delegates particularly affects relatively small delegations (*e.g.*, of some developing countries). Negotiators from small delegations must often follow the round the clock schedule, whereas delegates from the larger delegations are regularly replaced by 'fresh' colleagues. This unbalance could have an impact in two directions: either exhausted delegates agree on texts that they would otherwise not have agreed on, or they refuse to agree on draft decisions simply because they have lost view on the consequences of the text. One option for smaller delegations is to collaborate within larger negotiation groups, as described in Box 2-1.

Location of the negotiations

Hosting a negotiation session is prestigious and the host will do whatever it can to make the session a success so that the agreement can be named after the city where the session was held (*e.g.,* Berlin Mandate, Kyoto Protocol, Buenos Aires Plan of Action, Bonn Agreement, Marrakech Accords, Bali Plan of Action, Cancun Agreement, Durban Platform, Doha Climate Gateway). This could affect the negotiation position of the host country. For example, in order to contribute to the success of COP-3 in

Kyoto, the Japanese government was willing to accept relatively strict emission reduction commitments under the Kyoto Protocol, in an effort to show the right example.

Availability of documents

All official documents (*i.e.* reports, negotiation texts, *etc*. prepared by the official secretariat of the UNFCCC) to be discussed at UN negotiation sessions need to be made available at least six weeks before the session in the six official UN languages: Arabic, Chinese, English, French, Russian and Spanish. In practice, however, this rule is difficult to comply with as compiling official texts and translating these into the six language is a time-consuming process (several tens of official documents are submitted to negotiations). Not rarely, texts become only available at the meeting itself and only in English, which makes negotiations on these texts more difficult for non-English speaking (or even non-native English speaking) negotiators. This could delay negotiations as delegates at COP negotiations could refuse to continue negotiating without the availability of a text in their own UN language (which actually happened in the past).

Personalities of the key negotiators

Finally, for their success negotiations strongly rely on confidence in negotiators' intentions to come to a successful closure of the sessions. The personality of the key negotiators plays an important role in this respect. When US Vice-President Al Gore came to Kyoto to address COP-3, he offered more flexibility from the side of the USA during in the remainder of the COP session. He effectively stepped over the Byrd-Hagel resolution 'mandate' and allowed the US negotiators to accept emission reduction commitments, even if key developing countries would not accept commitments. This facilitated negotiations during the second week of the COP after a very disappointing first week.

Another example is the role of the chairperson of the COP-3 working group on a Protocol text, Mr Raul Estrada from Argentina. He cleverly merged the US proposal to establish project-based emissions trading between industrialised and developing countries with the Brazilian idea to establish a Clean Development Fund, which would collect penalties from industrialised countries that would not comply with the Kyoto Protocol commitments, and use this money to invest in sustainable development projects in developing countries (Matsuo, 2003). Estrada took the sustainable development objective of the Brazilian idea as a starting point but proposed that industrialised countries immediately invest in such projects for which they would receive GHG emission reduction credits in return, instead of waiting for penalties to become available after 2012. Estrada thus kept the project-based emissions trading idea (which developing countries had generally opposed) alive by ensuring that its main objective would be sustainable development for developing countries. This combination was acceptable for Annex I countries and difficult to be rejected by non-Annex I countries as it was mainly based on an idea put forward by a developing country, Brazil.

Information availability

Section 2.2 has shown cases where a prisoners' dilemma situation could emerge due to a lack of communication between players or the absence of an overarching authority to guide players to the aggregate optimum: the outcomes may be optimal from the viewpoint of each individual player (given

his options and available information), but sub-optimal from an overall, aggregate perspective. Communication among the players via an overarching authority, through bargaining concepts or through external sources, such as newsletter, policy briefs, books, workshops and conferences, could subsequently help achieve a better aggregate outcome. In the context of climate change policy such communication would for instance enhance the common knowledge of the players of the benefits and costs related to cooperation in a climate policy regime, which could create opportunities to jointly carry out GHG abatement action that countries would not have carried out on their own.

2.5. Method for Analysis

In this chapter, the three basic conditions identified in Chapter 1 as minimally required for successful international climate policy negotiations have been further elaborated on, based on a literature review. From literature on game theory, factors have been identified that determine the design (*i.e.* size and structure) of an international coalition, such as for climate policy making (basic condition 1). It has been concluded that formal negotiations on international agreements, such as under the auspices of the UN, are characterised by the absence of an overarching authority to enforce compliance with the agreed objectives and targets. It has been explained how incentives for compliance should preferably come from within the agreement in the form of political goodwill from cooperation, compensating financial and technology transfers, and cost-effective mechanisms to reduce compliance costs (*e.g.*, emissions trading). Such incentives not only enable the creation of a sufficiently large climate policy coalition to address free riding, consider climate change as 'tragedy of the commons' and treat climate policy making as a public good, but also keep the coalition stable during its operationalisation. An important aspect of negotiations, in order to establish a stable coalition, is that an acceptable allocation of commitments and surpluses is sought across the participating parties and that institutional structures are adequate for monitoring the compliance with agreed commitments. Different approaches can be used for that, such as dividing an overall climate goal across countries or a bottom up assessment of how climate measures fit within country needs.

Insights on the process of negotiations (basic condition 2) have been generated from literature sources on 'integrative' versus 'distributive' negotiation process context and it has been examined to what extent climate negotiations would fall in either category, or in both with development from one process category to the other as a result of repetitive negotiation rounds. The chapter has also described what the official climate regime negotiation process looks like, with a central role for the COP. Not all negotiations necessarily take place at the level of the COP. The COP often formulates general principles, modalities and procedures for particular issues and gives specialised bodies, with a balanced geographical (and political) representation, the task to focus on the details of each issue. As will be shown elsewhere in this study, also at this lower level, negotiations could be politically sensitive with conclusions based on political compromises.

Finally, tactical and facilitating aspects during negotiations have been elaborated on. It has been discussed how country tactics can be determined by preferences of the state as a whole, preferences of domestic interest groups and the role of domestic institutional structures in building up a national negotiation position. It has also been discussed how the course of negotiations (and their outcomes)

can be influenced by a range of tactical and/or facilitating factors, such as whether negotiators have clear mandates from their governments, are influenced by (international) interest groups such as environmental NGOs, face time pressure to complete negotiations before a deadline, and have all necessary documents available in the right languages and at the right moment (basic condition 3).

In the next chapters, it will be examined whether and how these basic conditions – as identified in Chapter 1 as minimally required for addressing game-theoretical aspects of climate negotiations – have been met during high-level negotiations on the UNFCCC, Kyoto Protocol and, currently, a post-Kyoto agreement (Chapters 3 and 7), as well during more technical-level negotiations on the modalities for the market mechanisms JI and CDM (Chapters 4, 5 and 6). For that, each negotiation file introduced in Chapter 1 will be described first in terms of:

- Chronological sequence of negotiation steps within the file;
- Characterisation of the steps made;
- Identification of decisive negotiation aspects in terms of design, process, and tactics; and
- Description of the final negotiation result.

As a next step, each file will be analysed in terms of whether and how the basic conditions for success have been met. In order to support that analysis, using the theoretical insights gained in this chapter, the conditions are examined, whereby design of the agreement (related to basic condition 1) is analysed in terms of:

- **Scope** of the policy area addressed by the policy package (*e.g*., mitigation, projects, accounting),
- **Principles** applied in the package, such as 'common but differentiated responsibilities', whether or not to allow non-additional projects in the CDM, link between GHG abatement measures with countries' sustainable development priorities,
- **Main goals** formulated in the packages to be achieved within a timeframe, with characterisation of responsibilities and procedures for monitoring and evaluation of progress towards achieving goals, and
- **Means** for achieving the goals, such as policy instruments, compliance structures, capacity building and finance.

The examination of the negotiation processes (related to basic condition 2) will focus on:

- **Organisation of meetings** (frequency, political level, technical, procedural or political nature of meeting, *etc*.) and how this has contributed to successful negotiation outcomes.
- **Negotiation approach or strategy** applied: *e.g*., formulating mandates with a longer or medium term goal and with formulation of intermediate milestones, negotiations in smaller working groups with representatives of country groups, keeping some progress steps deliberately vague so as to avoid sensitivities, or assuring that negotiations do not result in clear winning and losing groups so that next negotiation steps would be threatened.
- How **responsibilities** during negotiations are defined, in terms of electing chairs, appoint work group leaders, which countries take the lead on which topic, *etc*.

Finally, tactical aspects of negotiations (related to basic condition 3) are examined by focussing on:

- How are **scientific** findings fed in the process?
- How is the negotiation process facilitated by **administrative** support from the UNFCCC secretariat or other bodies under the Convention?

- What has been the impact of **personalities** of key persons, *e.g.*, in accelerating negotiations or avoiding negotiation deadlocks?
- How have negotiations managed to consider **country differences** and resulting differentiated negotiation perspectives?
- How have **unexpected developments** during a negotiation process been dealt with, such as for instance the US withdrawal from the UNFCCC (as explained in Chapter 1) in 2001?
- How have these **tactical and facilitating factors** contributed to success?

Chapter 3. Negotiations on a Global Climate Policy - the Kyoto Protocol

3.1. Introduction

Chapter 1 described the negotiation process leading towards the adoption of the UN Framework Convention on Climate Change (UNFCCC) on 9 May 1992. As explained, the ultimate objective of the UNFCCC is to achieve a stabilisation of GHG concentrations in the atmosphere "at a level that would prevent dangerous anthropogenic interference with the climate system" (UNFCCC, 1992a, pp. 9, Art. 2). Such a level should be achieved "within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner" (INC, 1992).

In addition to this long-term overall objective, the guiding principles have been defined for Parties when taking GHG abatement measures in the context of the UNFCCC (1992a. Article 3), such as the principle of 'common but differentiated responsibilities' and the precautionary principle, which have been discussed in Chapters 1 and 2. Other principles included in Article 3 are that:

- The climate system should be protected for the benefit of present and future generations of humankind;
- Full consideration should be given to specific needs and circumstances of developing country Parties;
- Parties should promote sustainable development; and
- Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination of or a disguised restriction of international trade.

With the 'common but differentiated responsibilities' principle in mind, the UNFCCC distinguishes between Annex I Parties (UNFCCC, 1992a, pp. 32 - Annex I),[25] Annex II Parties (only OECD members in 1992 (UNFCCC, 1992a, pp. 33 - Annex II)), and non-Annex I Parties (developing countries). This distinction is mainly based on differences between signatory Parties regarding economic welfare levels and allows for assigning different commitments and responsibilities to different groups of countries. In terms of objectives, the main differences between Annex I, Annex II and non-Annex I countries under the UNFCCC are:

- Annex I Parties agreed, in 1992, to return individually or jointly to their 1990 levels of anthropogenic emissions of CO_2 and other GHGs not controlled by the Montreal Protocol by the end of the 1990s.

[25] Member states of the Organisation for Economic Cooperation and Development (OECD) and Central and Eastern European countries with economies in transition Note that of the formerly centrally planned countries in Central and Eastern Europe, Armenia, Azerbaijan, Bosnia and Herzegovina, Croatia, Czech Republic, Estonia, Former Yugoslav Republic of Macedonia, Georgia, Hungary, Latvia, Lithuania, Moldova, Montenegro, Poland, Russian Federation, Serbia, Slovak Republic, Slovenia and Ukraine have also become OECD members since 1992. In addition, the former Soviet Union Republics in Central Asia have become OECD member: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan.

- Non-Annex I Parties, on the other hand, did not have such a quantified objective under the UNFCCC.
- Annex II Parties also adopted a commitment to facilitate technological and financial transfers to developing countries in order to protect them against the adverse effects of possible climate change.

Since 1992, in the context of the UNFCCC, a large number of policies, measures and instruments have been developed which generally aim at climate change mitigation and/or adaptation. With respect to mitigation, a specific policy measure in the UNFCCC context is to define emission limitation and reduction targets or objectives to be achieved by a particular year or period of time (commitment period). In addition, and partly in support of these quantified targets/objectives, Parties must set up national bookkeeping systems to make an inventory of the GHG emissions per sector and/or economic activity (UNFCCC, 1992a, pp. 23, Art. 12). Next to these bookkeeping systems, Parties also need to periodically inform the UNFCCC bodies about their domestic efforts to combat GHG emissions and enhance climate change resilience. The latter commitment also holds for developing countries.

This chapter describes the processes of designing the structure of the UNFCCC and, in particular, that of its first protocol with quantified commitments agreed at the third Conference of the Parties (COP-3) in 1997 in Kyoto, Japan. It discusses the main elements of the UNFCCC and Kyoto Protocol structures and details the steps in the negotiation processes followed, as well as the tactical and facilitating aspects of the negotiations up to 1992 and from 1992 through 2005. The chapter concludes with an analysis of how and to what extent the three basic conditions identified for this study's research questions have been met for these negotiations.

3.2. Towards a Climate Convention in 1992

3.2.1. Emerging country positions during the INC negotiation process

As explained in Chapter 1, by the end of the 1980s, a number of countries took the initiative to host international conferences about a global climate policy structure, such Canada (Toronto conference) and the Netherlands (Noordwijk conference). These conferences were held against the backdrop of upcoming intergovernmental negotiations on a UN Climate Convention. In 1989, UNEP and the WMO started with the preparations for negotiations on such a Convention. Developing countries, however, feared that if these two UN bodies would set up a negotiation framework, the negotiation focus might become rather technical, which in their view would insufficiently emphasise the vulnerable position of developing countries in terms of being able to adapt to climatic changes. Eventually, on 21 December 1990, the UN General Assembly took the initiative and decided on 'Resolution 45/212' (UN, 1990), which established an Intergovernmental Negotiating Committee for a Framework Convention on Climate Chang*e* (INC). It was scheduled that the INC would deliver a draft Convention text that would be ready for signature at the 1992 UN Conference on Environment and Development (UNCED, Rio de Janeiro, Brazil, May-June 1992).

The INC held five negotiation rounds during 1991-1992 under the Chairmanship of Mr Jean Ripert (France). In order to complete INC's work, the discussion in the fifth and final round had to be continued in a resumed session. The INC negotiations resulted in a true preamble for the later negotiations in the

context of the Ad hoc Group on the Berlin Mandate, the Kyoto Protocol and subsequent negotiations leading to the Buenos Aires Plan of Action, the Bonn Agreement and the Marrakech Accords. All UN members were invited to the INC sessions and almost from the outset of the negotiations the priorities of the negotiating countries differed widely. These differences became particularly clear in terms of answering the question which countries could be held responsible for past GHG emissions and how this responsibility could be translated into concrete actions. During the negotiations positions were also increasingly determined within country groups rather than by individual countries. The main groups and what positions they represented are briefly described below.

G-77 & China

First, the group of developing countries attempted to speak with a common voice in order to express the concerns and priorities of the 'South'. The so-called Group of 77 and China (G-77&China) officially presented the common position of the developing countries by emphasising that these countries are relatively vulnerable to the adverse effects of possible climate change.[26] For instance, small and low-lying island states and coastal areas in developing countries with a high population density would need assistance in order to adapt themselves to a projected rise of the sea level due to global warming. Such assistance would, in their view, have to take place in the form of transfers of mitigation and abatement technologies and financial resources.

At the same time, developing countries were concerned about adopting absolute emission reduction or limitation targets, as this could hamper their socio-economic developments. They argued that they needed sufficient scope for an increase in their standards of living and thus should not be subjected to emission cuts that could produce public backlash and political impasse (PANOS, 2000).

In addition, the G-77&China argued that industrialised countries, through their large-scale combustion of fossil fuels in the past, had been mainly responsible for the build-up of anthropogenic GHGs in the atmosphere. In the negotiations, G-77&China claimed that industrialised countries would, given this responsibility, have to take the lead in reducing GHG emissions through adoption of quantitative emission reduction or limitation targets to be achieved within a particular timeframe. Throughout INC negotiations, this position formed the basis for the principle of 'common but differentiated responsibilities' (see above).

In the course of the negotiations, however, the group of developing countries slowly but surely fragmented, which reflected the wide spectrum of countries with diverse levels of development and different priorities as far as the global warming issue is concerned (Depledge, 2004). The oil producing and exporting countries (OPEC), for example, became increasingly reluctant to accept a Climate Convention with (strong) emission reduction targets for industrialised countries as this could affect OPEC oil exports. The small islands states, with several states directly vulnerable to sea level rise, started to present their own position papers under the heading of the Alliance of Small Island States (AOSIS) and were in favour of emission reduction targets for industrialised countries which were often stricter than those proposed by the G-77&China. AOSIS was concerned about climate change because of the direct threat to them in terms of a sea level rise and a lack of resources to properly adapt to this threat.

[26] The G-77 was formed in 1964 and consisted by that time of 77 countries; nowadays, it comprises 133 members and is active throughout the UN system (UNFCCC, 2014c). Although not a member, China usually allies with the G-77 (Depledge, 2004) (UNFCCC, 2014c).

Other developing countries opted for a position somewhere in the middle of OPEC and AOSIS. They underscored the principle of 'common but differentiated responsibilities', but chose positions that were in between of those of the other two groups. Countries like China and India belonged to this 'middle' group.

OECD industrialised countries

A second category of countries consisted of members of the OECD. This group of industrialised countries did not speak with a common voice as they strongly differed with respect to their readiness to commit to GHG emission reduction targets. The European Community, for example, at the Second World Climate Conference (Geneva, November 1990), proposed that industrialised countries stabilise their CO_2 emissions at 1990 levels by the year 2000 (Bodansky, 2001). This proposal, which the EU subsequently submitted to the INC negotiation process, was met with huge resistance from particularly the USA, which strongly opposed any binding quantitative target to be achieved within the short or medium term. Other countries, such as Japan, Canada, New Zealand and Australia were not as outspokenly restrictive as the USA, but did not support the European Community proposal for a quantitative target, either.

The USA was a strong opponent to binding commitments in the early 1990s and even threatened to stay away from the UNCED meeting if other countries (especially the EU and the G-77&China) would pursue such commitments (Shah, 2012). Domestic interests played an important role in this respect (see Chapter 2). The US economy strongly relied (and relies) on fossil fuels and, being a large producer of oil and coal, the USA had (has) a comparative advantage in fossil fuel-intensive products. Moreover, the US powerful fossil fuel based business lobby was able to affect government decisions and positions on climate change policy (Shah, 2012).

Also individual EU Member States and their business communities expressed concerns about the impact of a global climate treaty with binding commitments on their competitiveness. In that sense, EU Member States did not differ from other industrialised countries in the OECD, where a growing awareness among the population of environmental issues went together with economic concerns (Shah, 2012), especially if a global treaty would not involve commitments for developing countries.

Central and Eastern Europe

The former socialist states in Central and Eastern Europe formed a third category of countries. These countries had just started a process of transition from a centrally-planned to a market-based economy, but were, given their industrial tradition, considered industrialised countries within the INC context. For them, the discussions on targets were not as sensitive as for most of their OECD colleagues because the disintegration of the centrally led regimes in these countries had sharply reduced GHG emissions since 1989/1990. In addition, during the INC negotiations, Central and Eastern European countries were provided with some flexibility as far as the choice of the base year and reporting commitments were concerned. Therefore, a GHG stabilisation target at, say, 1990 levels would probably hardly affect their economic transition process because during the 1990s the actual emission levels in Central and Eastern Europe were generally well below 1990 levels (European Environment Agency, n.d.) As a result, the Central and Eastern European countries, though active at INC sessions, did not have a crucial and decisive influence on the negotiations.

3.2.2. Towards agreement on the UNFCCC

The above-mentioned differences in points of view between countries or groups of countries still had to crystallise when the first INC session (INC-1) was held in Chantilly (USA) in February 1991 (INC, 1991a). Negotiations were slow and often characterised by an extensive discussion on procedural matters.[27] INC-3 (Nairobi, Kenya, September 1991 (INC, 1991b)) to a certain extent managed to deal with the contents of the future Convention, although progress remained slow. The main issue of discussion was the extent to which industrialised countries would agree on an emission reduction target[28] and a timetable for this to be achieved. As discussed in Chapter 1, this file therefore formed a clear example of a negotiation process without an upfront GHG emission reduction goal, but where the target was subject of negotiations itself (see Figure 1-3). Another crunch issue was the extent to which industrialised countries would be willing to transfer adequate and additional funding to developing countries under the Climate Convention. The latter issue was crucial for developing countries' support for the Convention to be established (see also above).

The fragmentation of the G-77&China became apparent at INC-4 (Geneva, December 1991) (INC, 1991c). For the first time at INC, a distinction could be made between the positions of the OPEC, AOSIS and 'middle position countries' like India and China (Arts, 1998, p. 105).

The little progress made at INC-1 through INC-4 required the delegates to meet twice, instead of once more before UNCED. INC-5 was therefore held in two sessions which were both characterised by tough negotiations on binding targets and timetables, and on technology and financial transfers (INC, 1992). One group of industrialised countries (led by the USA) totally opposed binding targets and timetables, whereas the European Community, for example, remained in favour of a target to stabilise industrialised countries' GHG emissions by a certain point in time in the future at the level of a chosen base year.

At the resumed fifth session of INC (New York, May 1992) (INC, 1992), countries found a compromise on a text for the Convention. This text reflected the principle of common but differentiated responsibilities because it contained an objective for industrialised countries to return their GHG levels to 1990 levels by the year 2000 (or another base year for countries with economies in transition), whereas for developing countries no such objective was included (UNFCCC, 1992a, pp. 12, Art. 4.2(a)). The status of this 'objective' was rather ambiguous though, because it was not formulated as a legally binding target and the text did not refer to an instrument to deal with non-compliance. The objective was rather a formal recognition that a stabilisation of GHG emissions would contribute to achieving the overarching objective of stabilising GHG concentrations in the atmosphere at safe levels. The INC-1-5 negotiations had made clear that a non-legally binding stabilisation objective was, for the time being, the most feasible quantitative target for the UNFCCC. This compromise, including an agreement on the issue of financial transfers to developing countries, was submitted by the INC to UNCED as a draft text for the UNFCCC (INC, 1992).

[27] For example, discussions at the INC-2 (Geneva, July 1991) (INC, 1991d) were extremely delayed because the delegates could not agree on who would chair the working groups established by INC-1. One working group was to focus on the contents of a future climate convention and the second working group's focus was on legal and institutional matters.

[28] For example, there were discussions on whether a target would have to be set, or perhaps whether an objective would be politically feasible. Furthermore, views differed on whether to focus on emission reductions or emission stabilisation or emission limitation.

The UNFCCC was adopted at UNCED, on 9 May 1992, and it entered into force on 21 March 1994, 90 days after deposit of the 50th instrument of ratification (Portugal, 21 December 1993) (UNFCCC, 1992b).

3.2.3. Balancing between effectiveness and international participation in the UNFCCC

As concluded earlier in this study, the negotiations leading to the UNFCCC needed to balance the aim of creating an environmentally effective treaty on the one hand, and acquiring as much support from countries as reasonably possible, on the other hand, given the global nature of the climate change issue. However, as explained in Chapter 2, a global climate treaty faces compliance problems since there is no overarching authority to enforce compliance with internationally agreed goals or commitments. Therefore, the challenge of negotiations is to establish an international climate coalition which creates sufficient surpluses, in order to make it more attractive for countries to become/remain part of the coalition than to stay outside/to leave it. Consequently, a global climate treaty must balance between strictness and international country participation.

This chapter explores, in analysing whether and how the three basic conditions for negotiations were met, how this balancing took place during negotiations leading to the Kyoto Protocol of 1997 and the subsequent agreement and accords that were concluded between 1997 and 2001 on modalities and procedures for Protocol implementation. The Kyoto Protocol has been a first concrete step to define in more detail what was actually meant by 'common but differentiated responsibilities'. Negotiations between 1995 and 1997 again centred on questions related to quantified targets (for which countries? and how strict?) and the potential role for Joint Implementation (JI) as an instrument for countries to fulfil their commitments jointly with other countries in a cost-saving manner. Generally, developing countries stressed that accepting GHG emission limitation targets would be unacceptable to them given that this would hamper their economic growth and would insufficiently reflect the fact that industrialised countries since the industrial revolution have emitted most GHGs into the atmosphere. Furthermore, developing countries disliked the idea of using JI as they were concerned that through JI projects industrialised countries would postpone relatively costly domestic energy production and consumption reforms.

However, a limitation of the use of JI would imply higher GHG abatement costs for industrialised countries, which would make them less willing to adopt strict emission reduction targets. Hence, immediately after the first Conference of the Parties to the UNFCCC (COP-1, Berlin, 1995) had decided to start Protocol negotiations, the earlier tensions became visible again, which is analysed elsewhere in this Chapter. As a prologue to that analysis, the question will be discussed below to what extent the UNFCCC – with 195 ratifying countries, but without legally binding commitments – can be considered reasonably effective. It should be noted, however, that an analysis on the effectiveness of the UNFCCC must be interpreted with care because, as explained above, the UNFCCC was the first global climate change policy treaty of its kind under the auspices of the UN when scientific evidence of the relation between anthropogenic GHG emissions and global warming was still limited. Since the adoption of the UNFCCC, scientific knowledge has been increased through, among other sources, three IPCC Assessment Reports (by the adoption of the UNFCCC in 1992 the IPCC had just completed its First Assessment Report (Houghton, et al., 1990)). The conclusion of the Second Assessment Report of IPCC in 1995 for the first time stated that "there is a discernible human influence on the climate systems" (IPCC, 1995). This conclusion offered policy makers a more

specific input on human-induced climate change during climate regime negotiations in the second half of the 1990s. Nonetheless, this did not imply that negotiators could rely on a clear upfront GHG emission reduction target to be achieved within the context of the precautionary principle (see discussion in Chapter 1 around Figure 1-3). As a result, the overall goal to be achieved by a negotiated package became a negotiation topic in itself.

In the particular case of the UNFCCC it is obvious that the objective of global participation was achieved as the Convention was adopted at UNCED (1992) by consensus and has been ratified since then by 195 countries (194 countries and the EU) (UNFCCC, 1992b). To what extent the UNFCCC has established an effective climate regime, in terms of reducing or limiting GHG emissions on a global scale, is explored below:

- The UNFCCC contains a long-term objective to stabilise GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. This objective, however, was not further defined in terms of the concentration of CO_2 in the atmosphere. At best it placed an important question on scientific and political agendas: beyond which atmospheric GHG concentration levels will 'dangerous anthropogenic interference with the climate system' take place? The UNFCCC also included a short-term objective for industrialised countries to stabilise their emissions by the year 2000 on 1990 levels. In the UNFCCC, however, there was no link between these two objectives in terms of the extent to which the short-term emissions stabilisation would contribute to achieving the long-term atmospheric concentration stabilisation objective. Rather, as explained in Section 3.2.2, it could be concluded that the short-term stabilisation objective for industrialised countries was the result of a political process of finding a compromise between the desire of, among others, the AOSIS and the EU to have binding limitation targets for industrialised countries with clear timetables and the opposition to such targets from mainly the USA.
- The short-term stabilisation objective of the UNFCCC was absolute: it was not related to the economic performance or demographic developments within countries. It was common in the sense that it applied to all industrialised (Annex I) countries in the same manner, but differentiated in the sense that developing countries were exempted from such an objective. Next to the quantified GHG stabilisation objective, the UNFCCC included commitments in terms of: facilitating technological and financial transfers from industrialised countries to developing countries, developing national inventories of GHG emissions by sources (all countries), and promoting scientific, educational, training and public awareness initiatives (all countries).
- An important element in the UNFCCC was the inclusion of JI as a market-based instrument. As such, the UNFCCC provided ample scope for achieving cost-effectiveness of abatement actions by accepting a market-based instrument in the set of policies and measures. However, the decision at COP-1 in 1995 to establish a pilot programme for JI, called Activities Implemented Jointly (AIJ), without the possibility of crediting the emission reductions achieved under AIJ against countries' UNFCCC commitments, made this market-based instrument non-effective for the time being (see Chapter 4).
- As a consequence of this political game, the best achievable outcome for the UNFCCC was a non-binding target or objective for the short term (year 2000). Therefore, meeting the UNFCCC objectives was largely based on the voluntary actions and, related to that, the economic performance of the countries. For example, for the countries with economies in transition in

Central and Eastern Europe, compliance with the UNFCCC stabilisation objective for the year 2000 was no problem as they showed a strong decrease in emissions due to the disintegration of their centrally planned economies. In many OECD countries, however, GHG emission levels continued to grow during the 1990s due to their economic growth (see Figure 1-1). This made their efforts to return emissions to 1990 levels by the year 2000 difficult, especially without an effective use of JI.[29] Compliance with the non-quantitative commitments of the UNFCCC was easier for all countries, and this was enhanced when the Kyoto Protocol of 1997 made the participation of countries in emissions trading and emissions trading projects (such as JI) conditional on, among others, the submission of national communications on climate policies and national inventories of GHG emission sources.

- In the design of the UNFCCC it was assured that the treaty would be compatible with other treaties. For example, in its formulation of the stabilisation objective between 1990 and 2000, the UNFCCC text explicitly stated that the stabilisation target does not apply to GHGs already controlled by the Montreal Protocol. Thus, reductions under the Montreal Protocol could not be counted under the UNFCCC. With respect to compatibility of the UNFCCC with domestic policies, countries had a fairly large scope of flexibility in making climate measures compatible with already existing national policies. Finally, the UNFCCC explicitly stated that countries should not use climate change measures as a disguised restriction of international trade (UNFCCC, 1992a, pp. 9-10).
- The eventual outcome of the INC negotiations on the UNFCCC was strongly based on equity considerations. As explained above in the previous sections, developing countries successfully pointed at their disadvantageous position in terms of socio-economic welfare and the fact that industrialised countries in the past had released most of the anthropogenic GHGs into the atmosphere. Based on their 'ability to pay' and 'larger responsibility', industrialised countries were expected to take the lead.

In conclusion, the agreement in 1992 on the UNFCCC without specifying legally binding quantitative commitments for countries and without a compliance regime towards the year 2000 had a low effectiveness. In line with the analysis in Chapter 2, the 1992 agreement left considerable scope for 'free riding' and it hardly created incentives for countries to carry out additional efforts to bring GHG emissions back to 1990 levels. The benefits from such efforts ('share of the surplus') were mainly goodwill (*e.g.*, progressive action and a green image) and to some extent establishing and/or enhancing cooperation between countries on promoting sustainable development and energy efficiency improvement.[30] However, compliance with the UNFCCC objectives did not guarantee a favourable treatment during future negotiation rounds (*e.g.*, Kyoto 1997), nor did over-compliance offer banking opportunities against future commitments.

[29] Of the 1992 OECD countries, only Germany (due to the unification of the BRD and DDR), Luxembourg, and the UK (due to the reform of its electricity production in the early 1990s, which implied a large-scale conversion from coal-firing to less carbon intensive fuels) met the UNFCCC stabilisation target in 2000. This conclusion is based on an analysis of National Communications by Annex I Parties to the UNFCCC (UNFCCC, 2014e).

[30] For instance, the Netherlands Government gave its bilateral energy co-operation programme with countries with economies in transition ('Programma Samenwerking Oost-Europa, PSO, established in the early 1990s) a considerable climate change dimension by underlining the GHG abatement potential of PSO energy efficiency and conservation projects. Another example can be found in the range of bilateral sustainable development agreements that the Clinton Administration signed with the countries in the Central Americas during 1993-1995 as part of the US Climate Action Plan of 1993.

In this respect, it can be concluded that in the process of establishing the UNFCCC basic condition 1 (design of agreement) was not met; the final outcome was quite far away from what would be considered an environmentally effective agreement. Although it showed increasing recognition among Parties that the danger of human-induced climate change is real[31] and that industrialised countries should take the lead in solving the problem ('common but differentiated responsibilities'), the absence of binding commitments, clear timetables for further action, and emissions trading made the UNFCCC far from effective during the 1990-2000 decade. The negotiation power of industrialised countries such as the USA versus the group-wise negotiation positions of developing countries and Europe created a situation in which achieving the objective of global participation and cooperation was only feasible if the Convention text itself was watered down to a relatively weak treaty (in terms of Figure 1-3, the distance between A and D was rather large). Just before a prestigious summit as UNCED (1992), countries realised that it was better to have a weak climate treaty than no treaty at all.

Basic condition 2 was met in the sense that the process had the flexibility to accelerate negotiations shortly before the UNCED summit. However, it also became clear that the two-year negotiation period 1991-1992 was rather short for proving enabling conditions for meeting basic condition 1. The adoption of, *e.g.*, the principles of common but differentiated responsibilities and taking precautionary actions, as well as handling of the stabilisation objectives for industrialised countries without legally-binding status showed that at some negotiation stages there had been decisive tactical manoeuvres, which enabled reaching an agreement (meeting basic condition 3).

3.3. The Negotiation Process leading to the Kyoto Protocol

3.3.1. The Berlin Mandate

Within the context of the UNFCCC, countries met in 1995 in Berlin at COP-1 to elaborate in further detail the Convention's objectives, policies and measures framework, and institutional setting (*e.g.*, facilitating technology transfers to developing countries, designing of compliance regime, *etc.*).[32] A key task of COP-1 was, in accordance with UNFCCC Article 4.2(d), that the COP should, at its first session, review the adequacy of commitments for Annex I Parties as formulated in Articles 4.2(a) and (b): to adopt national policies and corresponding measures on the mitigation of climate change; and to return GHG emission levels to 1990 levels by the year 2000.[33] An important instrument for this review was the obligation of Parties to submit to the COP a national inventory of anthropogenic GHG emissions, including the policies and measures adopted and their estimated effect on emission levels (hereafter: 'national communications', UNFCCC, Article 12). By the time the eleventh session of INC was held (6-7 February 1995, New York) (INC, 1995a), 15 Annex I countries (together representing

[31] This aspect can be pointed out as a success of the UNFCCC as in the early 1990s a huge amount of scepticism existed on whether human action could really affect the climate. Some scientists argued that global warming could also be the consequence of natural millennium-type cycles in the change of the climate (Shah, 2012).

[32] COP-1 was held one year after the entry-into-force of the UNFCCC, which took place in March 1994; between UNCED (1992) and COP-1 (1995) Parties continued negotiations in the context of the INC (see also Chapter 4).

[33] The COP itself was established under the UNFCCC in Article 7 as the supreme body of the Convention with, among others, the task to periodically examine the obligations of the Parties (UNFCCC, 1992a, pp. 17, Art. 7).

41% of global GHG emissions) had submitted their national communications based on which the INC made a first assessment of the adequacy of commitments.

The discussions at INC-11 took place in the context of the preparations for COP-1, which was scheduled for a month later. The UNFCCC secretariat had prepared an assessment of the national communications received and concluded that CO_2 accounted for 75% of the reported emissions (INC, 1995b) (Earth Negotiations Bulletin, 1995a). Nine Parties projected an increase in CO_2 emissions between 1990 and 2000, six Parties expected that their CO_2 emissions would either have stabilised or decreased by 2000 or 2005. Based on this assessment and in the light of the expected conclusions of the IPCC's Second Assessment Report of 1995 (IPCC, 1995), Parties agreed at INC-11 that the stabilisation targets for Annex I Parties as agreed under the UNFCCC in May 1992 were inadequate.

Parties disagreed, however, on the next step to be taken by the COP (Earth Negotiations Bulletin, 1995a). Several Annex I Parties, particularly Germany and the USA, proposed that COP-1 would formulate new aims for a global climate policy for the post-2000 period, for instance via a protocol or other legal instrument. Developing countries, however, said that negotiations on new aims and legal instruments for the post-2000 period should not lead to a diversion of attention away from Annex I Parties' stabilisation objective prior to 2000. Moreover, developing countries feared that a debate on new commitments could put pressure on them to also agree with emission reduction or limitation commitments. This concern was particularly raised in reaction to the German 'elements paper', which was circulated at INC-11 and which suggested formulating differentiated commitments for some groups of developing countries.[34] Consequently, while agreeing on the inadequacy of commitments, non-Annex I Parties stressed at INC-11 that post-2000 negotiations should not focus on commitments for developing countries (Earth Negotiations Bulletin, 1995a).

At COP-1 (Berlin, Germany, 24 March-6 April 1995), non-Annex I Parties repeated these concerns. In the course of the two-week negotiations, Parties slowly moved towards a compromise on a mandate to establish a protocol or other legal instrument for post-2000 commitments, based on the principle of common but differentiated responsibilities. Several Parties tabled proposals for a protocol, which varied from proposing the 'Toronto target' (see Chapter 1) by the Alliance of Small Island States (AOSIS) to New Zealand's proposal that, next to industrialised countries, also developing countries with relatively high GHG emissions should adopt emission reduction goals in a protocol. Eventually, a 'Friends of the Chair' group with 24 Party representatives prepared the final text that was agreed upon by the COP-1 and which was referred to in the COP Decision as the 'Berlin Mandate' (UNFCCC, 1995a) (Earth Negotiations Bulletin, 1995b).[35]

The Berlin Mandate aimed, for Annex I Parties, "to elaborate on policies and measures, as well as to set quantified limitation and reduction objectives within specified time-frames, such as 2005, 2010 and 2020, for … anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol" (UNFCCC, 1995a, p. 5). As a result, the overall goal to be achieved by the package to be negotiated under the Berlin Mandate, became a negotiation topic itself (see discussion in Chapter 1 around Figure 1-3).

[34] The German delegation circulated the paper in preparation for its role as Chair of COP-1 (Earth Negotiations Bulletin, 1995a).
[35] Decision 1/CP.1 (UNFCCC, 1995a). The name 'Berlin Mandate' was suggested by the US delegation.

Furthermore, the mandate recognised that Annex I Parties differ in terms of economic structure and resource base, which would need to be reflected in the eventual negotiation outcome. It was specifically mentioned that no new commitments would be introduced for non-Annex I Parties. Finally, the mandate called upon Parties to carry out the negotiation process "in the light of the best available scientific information and assessment on climate change and its impact." The Berlin Mandate negotiations took place at sessions (held once or twice a year) of the Ad hoc Group on the Berlin Mandate (AGBM) during 1995-1997.

A breakthrough in the negotiations was achieved in a number of ways (Earth Negotiations Bulletin, 1995b). First, Annex I Parties agreed with a similar interpretation of the principle of common but differentiated responsibilities as in 1992 under the UNFCCC, *i.e.* negotiations on a post-2000 protocol should only focus on new commitments for the group of Annex I Parties, not for developing countries. Second, Annex I Parties made clear that negotiations on post-2000 commitments would not reduce their efforts to comply with the UNFCCC stabilisation objective. By that, they addressed non-Annex I Parties' concerns that protocol negotiation would actually delay GHG abatement action in industrialised countries. Third, the G-77&China temporarily 'broke' with the OPEC countries in the group because the latter were of the opinion that it was premature to draft a protocol at all. In the corridors, it was said that OPEC countries were against attempts to reduce GHG emissions as this might reduce global demand for fossil fuels, including oil. The G-77&China, inspired by India's input, continued negotiations as the so-called Green Group, which was in favour of a post-2000 climate protocol with common but differentiated responsibilities.

3.3.2. From 'Berlin' to 'Kyoto' – negotiations under the Berlin Mandate

Between August 1995 and December 1997, the AGBM met eight times to negotiate a protocol or other legal instrument within the framework of the Berlin Mandate.[36] Similar to the process leading to the UNFCCC, also the AGBM negotiation process was, at the first sessions, characterised by a strong focus on procedures and principles before Parties actually began drafting a legal document. Especially the notion in the Berlin Mandate that the negotiations were to take place in the light of best available scientific information led to considerable confusion. Some Parties proposed to assess available information first in the AGBM context before starting the actual negotiations, whereas others believed that the assessment and the negotiations could, or even should, be carried out in conjunction as both information assessment and negotiations were, in their view, continuous, iterative processes. Eventually, Parties decided in favour of the latter option, but when time was running out towards COP-3, Parties mainly focussed on negotiation dynamics and less on the (scientific) information which could feed the negotiation process.

Despite the agreement at COP-1 not to focus on new commitments for non-Annex I Parties, commitments for developing countries, especially for those that are undergoing a relatively strong industrialisation process, remained a pending issue throughout the AGBM process, as well as at COP-3. Proposals for such commitments were, for instance, formulated as voluntary targets, or sets of policies and measures, and by US President Clinton as 'meaningful participation' when he announced

[36] The analysis in this Section is largely based on a study of the detailed reports of the Earth Negotiations Bulletin, 1995-1997, which was assigned by the UNFCCC secretariat to report on climate negotiations, with financial support from a range of Parties (IISD, sd).

the US proposal for a protocol or other legal instrument[37] in 1997. Developing countries remained very critical on this issue and rejected any claim from Annex I Parties that new scientific information (mainly from IPCC) had changed the background for negotiations since COP-1 and argued that there was no need to adjust the Berlin Mandate accordingly.

In this discussion, the EU, unlike countries such as New Zealand and Australia, did not support the USA. The EU focussed strongly on formulating mandatory sets of policies and measures next to quantified targets for Annex I Parties and held on to its official position taken prior to COP-1 that Annex I Parties should show a considerable abatement effort first before requesting developing countries to also adopt commitments.

One effect of the debate on the participation of developing countries in a Protocol was that the splitting of the G-77&China into a 'Green group' and the OPEC countries, which happened at COP-1, was repaired during the AGBM process. OPEC countries managed to include on the agenda the topic of compensation for developing countries whose economies strongly depend on income generated from fossil fuels. The other G-77&China countries generally supported the OPEC countries on this. Eventually, the G-77&China negotiators turned out to be very skilful in avoiding detailed debates on non-Annex I commitments, especially at COP-3 when they focussed so much on the issue of emissions trading (introduced by the USA) that, by the end of the session, no consensus could be found anymore for negotiating meaningful participation by developing countries.

Notwithstanding the importance of this topic, most attention during the negotiations was paid to the issues of setting targets/commitments for Annex I Parties and to what extent these could be achieved flexibly in terms of location, timing and inclusion of GHGs other than CO_2. In this context, Parties discussed a number of options. Some Parties proposed so-called flat rate commitments (a similar emission reduction percentage target for all Annex I Parties) with maximum flexibility in terms of: location where emission reductions can be achieved (*e.g.*, through JI or emissions trading); timing, with proposals varying from a single compliance year to an emissions budget or commitment period of five years; and, number of GHGs covered, whereby proposals ranged from focussing on CO_2 only to baskets of GHGs expressed as CO_2-eq. The rationale of this option was that differences in marginal abatement costs between countries (due to structural differences) would be levelled out through the flexibility provided.

Other Parties proposed differentiated targets, which would reflect structural differences between industrialised countries. However, there was a long debate on whether such differentiation should be based on a formula with agreed, scientifically supported, criteria or simply be left to the dynamics of negotiations. It was increasingly felt during the AGBM process that differentiation was necessary for reaching agreement, but, as stated by the German delegation at AGBM-6 (3-7 March 1997), scientifically derived indicators may not necessarily reflect political reality. Hence, in the course of time, Parties began issuing proposals with their own quantified targets which had either been scientifically determined, or set as a matter of principle or reflecting domestic political interests. For example, in March 1997 the EU presented its collective GHG emission reduction target of 15% (below

[37] Throughout the AGBM negotiations the legal shape of the negotiation outcome of the Berlin Mandate was still to be decided. In their proposals, Parties, in conformity with the Berlin Mandate, referred to 'a protocol or other legal instrument', In the remainder of this section, the term 'legal instrument' will be used unless Parties specifically mentioned 'protocol' (Earth Negotiations Bulletin, 1995-1997).

1990 levels to be achieved in 2010), which was based on the scientifically determined Triptych Approach (Phylipsen, et al., 1998) (see also below). The USA, instead, announced in October 1997 that it aimed at stabilising its GHG emissions during a period of five years (2008-2012) at 1990 levels, which reflected the Byrd-Hagel resolution in the House of Representatives adopted in July 1997 (see elsewhere in this section) (Byrd & Hagel, 1997).

AGBM-1, Geneva, Switzerland, 21-25 August 1995

At the first session of the AGBM most of the discussion was on the scope of the Berlin Mandate and the organisation of the ad-hoc working group. Particularly important was the issue of analysis and assessment of available information on global warming, as required by the Berlin Mandate. Some Parties, in particular the USA, argued that negotiations on targets could only be effective if based on a comprehensive analysis of scientific research material as this would suggest which policy measures and targets are needed to achieve the overall UNFCCC objective. Other Parties warned against delaying the negotiation process and argued that assessment of new information should take place parallel to negotiations on targets and policies.

The basic difference of opinion in this context was rather nuanced. Proponents of assessment and negotiations taking place in parallel (*e.g.*, G-77&China as well as a number of EU Parties) argued that the need for targets/commitments had become clear from the review of adequacy of commitments at COP-1 and that assessment and analysis of detailed information would provide insight on what climate policy measures would be needed. Opponents to this vision (*e.g.*, the USA), on the other hand, said that negotiations would be insufficiently focussed on a required outcome without a clear guidance on what precisely would be needed. They saw the following sequence of events: first, review of adequacy of commitments by the COP; second, analysis and assessment of available information; and, third, determination of targets. Some Parties, particularly the G-77&China, but also Switzerland, Germany and UK, were concerned that the methodological debate could become a tactic to delay the process of strengthening Annex I Parties' targets.

AGBM-2, Geneva, Switzerland, 30 October – 3 November 1995

In comparison with AGBM-1 the second negotiating session on the Berlin Mandate was more constructive as a number of Parties delivered concrete proposals for the contents of the legal instrument to be adopted. To some extent, this might have been due to the official presentation of the IPCC Second Assessment Report (SAR) shortly before AGBM-2 which concluded that the "balance of evidence suggests a discernible human influence on global climate" (IPCC, 1995). Also, and perhaps more importantly, some Parties realised that presenting their views on the structure of a future climate regime as early as possible would enable them to influence the negotiation agenda. Experience from the INC negotiations had shown that proposals tabled in an early stage of the negotiations and supported by a significant group of countries would often form the basis of the eventual negotiation texts.

In this context, the USA, again, tried to show the importance of meaningful participation of developing countries in a climate regime. The US delegation even delivered a slide presentation of future GHG emission trends in case non-Annex I Parties would remain exempted from quantitative

targets as well as mandatory policies and measures. Based on IPCC SAR data, the USA argued that already in the first half of the twenty-first century, absolute GHG emission levels in developing countries would become higher than those of Annex I countries. According to the US proposal, this requires a global solution (Earth Negotiations Bulletin, 1995c).

The EU's early AGBM proposal was much less focussed on addressing responsibilities for non-Annex I Parties (Earth Negotiations Bulletin, 1995c). The EU emphasised that it wanted to base its assessment on the Berlin Mandate, which excluded quantified commitments for developing countries. Nevertheless, also the EU's proposal contained elements in the direction of a more active role for developing countries in a future legal instrument. However, instead of shaping this via quantified commitments, the EU's text described this role in terms of policies and measures, such as energy efficiency, production standards, and labelling. On the latter, the EU distinguished three types of activities: mandatory policies and measures for Annex I countries; voluntary action by developing countries; and certain measures that all countries would have to carry out.

However, the EU text did not clearly link these sets of policies and measures to quantified emission reduction targets. Germany and Canada instead suggested that quantitative targets should drive the policies and measures so that the legal instrument would define both the target and how to achieve this. In their view, this would enhance the credibility of a climate regime.

At this stage, the G-77&China were forced into a more defensive role as they felt that especially the US proposal and its rationale were a direct violation of the Berlin Mandate and a clear attempt to shift the focus of the AGBM. The group was particularly critical on the fact that the US presentation seemed to disregard historical, structural differences between countries on a global scale and argued that these differences had precisely formed the basis of the principle of common but differentiated responsibilities in both the UNFCCC and the Berlin Mandate.

Of a more technical nature, but not necessarily less political, were the proposals tabled at AGBM-2 by countries such as Japan, Norway, Switzerland, and the USA on differentiation of targets and the flexibility in achieving these in terms of timing and location (*i.e.*, JI). Some proposals suggested establishing group-based targets (similar targets for comparable countries) or individually differentiated targets, instead of a flat-rate target for all Annex I Parties.

The US proposal also introduced the option of having cumulative targets which would allow Parties to remain below the target level on average during a number of years. With cumulative targets, a country could, for instance, avoid being 'punished' for a suddenly strong economic growth or another unexpected event in the target year. Spreading the targets over a number of years (*e.g.* 5 years) would enable spreading the GHG abatement efforts over a longer period of time. The UK added to this proposal the option of basing targets on a basket of GHGs instead of just one.

AGBM-3, Geneva, Switzerland, 5-8 March 1996

Almost one year after the decision on the Berlin Mandate at COP-1 and with COP-2 forthcoming, AGBM-Chair Mr Raúl Estrada-Oyuela decided to point the negotiators at the growing urgency of the AGBM discussions. In the opening session of AGBM-3, he expressed his concern that attempts to delay negotiations, as had happened at the first two sessions (*e.g.*, by requesting further assessment and analysis of available information or discussing the issue of adverse effects of climate policy for

countries dependent of production of fossil fuels) would have a destructive effect on the overall negotiation process.

To a large extent, AGBM-3 continued the discussion on several of the topics discussed at AGBM-2 (quantitative targets, differentiation, policy and measures, participation of developing countries, and flexibility), but the ranking of topics in terms of importance throughout the discussion had somewhat changed. For instance, the sharp discussion at AGBM-2 on commitments for developing countries had clearly reduced the willingness of negotiators to touch upon the issue again. Instead, the discussion on participation of developing countries in a future legal instrument was more focussed on how to facilitate financial and technological transfer to non-Annex I Parties and the feasibility of having JI between Annex I and non-Annex I Parties.

Also the discussion on policies and measures was less pronounced than at AGBM-1 and 2. Apparently, countries had concluded from AGBM-2 that policies and measures would only be effective if linked to legally binding quantitative commitments. Therefore, the policies and measures debate, although it largely took place at the session and at an informal workshop held two days before AGBM-3, was politically much less sharp than the negotiations on quantitative commitments.

Regarding quantified commitments, Germany presented its proposals for a legal instrument text. Germany recommended that all Parties reduce their CO_2 emission in two stages at flat rates of 10% by 2005 and 15 to 20% by 2010. The German delegation preferred a flat rate instead of differentiated targets because it expected practical problems for differentiation in terms of defining criteria and indicators, which would further complicate negotiations. Differentiation could only be considered for countries with economies in transition. The absence of differentiation in the German proposal would be compensated for by flexibility measures in terms of JI.

Finally, regarding quantitative commitments, Brazil proposed that eventually AGBM would agree on an overall Annex I target which Parties could either adopt as a flat rate or differentiate among each other. In its view, a top-down procedure with an agreement on an overall target would prevent bottom-up agreements with individually agreed quantified targets which on aggregate would result in a disappointing overall effort.

AGBM-4 at COP-2, Geneva, Switzerland, 8-19 July 1996

Although AGBM-3 had already created some openings in the negotiations on a number of key issues in the Berlin Mandate context, the high-level character of the COP, during which AGBM-4 was held, turned out to be a stimulus to make considerable progress. Perhaps the biggest achievement of COP-2 was the announcement by the USA that it supported a legally-binding protocol or other legal instrument. Thus far in the AGBM process, the US delegation had submitted proposals on the *design* of an instrument (cumulative targets, differentiation, multiple gases, *etc.*), but never clearly on its *legal nature*. Note that the US announcement was made at the more political high-level segment of the COP (the Ministerial Segment on 17-19 July 1996), not at the AGBM-4 meeting itself (Earth Negotiations Bulletin, 1996a).

The USA, however, also called upon other Parties to create maximum flexibility in a legal instrument in order to complement legally-binding commitments. Important elements in the US proposal for flexibility were: a global application of the JI concept and the establishment of an international GHG

emissions trading scheme with participation of Parties with quantitative commitments. The latter option was also discussed at AGBM-4 in combination with a flat rate target approach as an alternative to differentiated targets approaches.

Regarding the inclusion of policies and measures in a global climate regime, which at former AGBM sessions had basically been considered in conjunction with quantified emission limitation and reduction objectives (or QELROs), there was general agreement that their application should not be overly strict. In fact, Parties suggested that differences in national circumstances should be an important factor in deciding which policies and measures to incorporate in national climate policies. There was discussion on whether the COP should define a menu of policies and measures from which countries could choose and on whether a limited set of policies and measures should become mandatory for Annex I Parties. Most outspoken in this respect was the US delegation which argued that no single set of policies and measures exists that fits all countries.

The progress made at AGBM-4/COP-2 was reflected by the 'Geneva Declaration' in which the Ministers and Heads of Delegations, among others stated that, while notifying the principles of common but differentiated responsibilities and precautionary actions, they would "instruct their representatives to accelerate negotiations on a legally-binding protocol or other legal instrument to be completed by COP-3" (Earth Negotiations Bulletin, 1996a) (UNFCCC, 1996b).

AGBM-5, Geneva, Switzerland, 9-13 December 1996

At AGBM-4, Chair Estrada had called upon Party delegates to submit proposals for a legal instrument text, in order to accelerate the drafting of a negotiation text. By its fifth session, the AGBM could consider 14 proposals submitted by Parties, including one from the EU as a whole (Earth Negotiations Bulletin, 1996b). Although the proposal texts still showed a wide range of views on issues such as policies and measures and QELROs, it could be observed that negotiations had become more streamlined now that consensus had been reached on the nature of eventual targets as legally-binding commitments. Now, as UNFCCC Executive Secretary Michael Zammit Cutajar said, the time had come to decide which proposals should be set aside or could be considered mutually exclusive, in order to single out a limited number of options to focus on in the final year of the Berlin Mandate process (Earth Negotiations Bulletin, 1996b).

At AGBM-5 it became clear that the status of policies and measures in a legal instrument remained an issue on which Parties still disagreed. The EU repeated its proposal to adopt a mandatory approach with common and co-ordinated policies and measures for so-called Annex X Parties. Annex X would consist of Annex I countries and new OECD members not included in UNFCCC Annex I, as well as, on a voluntary basis, some developing countries. Generally, the EU proposal was considered as rather strict and some Parties (*e.g.* Japan, Canada and New Zealand) repeated their preference for a menu from which policies and measures can be selected depending on national circumstances.

The debate on quantitative targets basically continued with an exchange of views on differentiation and flexibility as in the earlier AGBM sessions, with the exception of three issues:

- The US delegation introduced an inter-temporal element by proposing that countries which emit less than their target levels could bank this surplus for compliance with future climate agreements. On the other hand, countries that surpass their target would have the possibility to

compensate for the deficit by agreeing on stricter targets in the future. The latter aspect ('borrowing') was met with criticism as it was seen as an opportunity to delay abatement action.

- The EU was concerned that in the proposals of some Annex I Parties, especially the USA, emissions trading was considered an alternative for a set of policies and measures. The EU argued that emissions trading, being just one measure, could never replace a balanced set of policies and measures as proposed by the EU.
- Developing countries urged to treat JI and its pilot version AIJ as two separate concepts in the draft texts. They argued that AIJ had been set up as voluntary project-based cooperation with a global scope, but without the possibility of crediting emission reductions against Annex I countries' UNFCCC objectives or commitments. In their view, JI, with crediting of GHG emission reductions, should be limited to cooperation among industrialised countries only.

Finally, it became clear at AGBM-5 that the issue of involvement of developing countries had become even more sensitive than before. This was most clearly illustrated by the protest raised by the USA when Chair Estrada presented his draft conclusions of the session and, among others, quoted the Berlin Mandate which specifies that no new commitments for non-Annex I Parties should be included in a legal instrument (UNFCCC, 1995a, pp. 5, para.2b). The USA, but also the EU, did not understand why emphasising this issue was needed. Eventually, Estrada copied the entire paragraph from the Berlin Mandate into his conclusions (Earth Negotiations Bulletin, 1996b, p. 7). Nonetheless, at AGBM-5, the USA had somewhat changed its tone with respect to the participation of developing countries by proposing positive incentives for non-Annex I Parties to join the group of countries with quantitative targets. Also to this proposal the G-77&China had replied that developing country participation would only be up for discussion if Annex I Parties showed clear progress towards meeting their stabilisation objectives by 2000 as defined in the UNFCCC.

AGBM-6, Bonn, Germany, 3-7 March 1997

For the first time the AGBM session was held in Bonn, the new location of the UNFCCC secretariat (as decided at COP-1). It continued considering proposals on the design of a legal instrument submitted by Parties, such as the EU, USA, Switzerland, Australia and Norway. Most attention was paid to the EU and US proposals. Many other Parties, including the G-77&China, had not yet delivered elaborate proposals for negotiation texts. They mainly focussed on key issues on which they commented and for which they proposed alternatives (Earth Negotiations Bulletin, 1997d).

The EU had been very active prior to AGBM-6. Under the Dutch presidency, the EU Council of Ministers and Heads of State had agreed on a common EU emission reduction target for three GHGs (CO_2, N_2O and CH_4) of 15% below 1990 levels to be achieved by 2010. The aggregate target had been differentiated across the EU, using the so-called Triptych Approach (Phylipsen, et al., 1998),[38] with strong emission reduction targets for, *e.g.*, Germany and the UK and permissible emission increases for other Member States, *e.g.*, Greece and Portugal.

[38] The Triptych Approach was developed by the University of Utrecht (Phylipsen, et al., 1998) and was based on historical and projected emission trends in three different (categories of) sectors within the EU: the power sector, internationally-operating energy-intensive industry, and domestically-oriented sectors.

In addition, the EU kept pushing its proposal on policies and measures which it wanted to become legally-binding under a legal instrument. On this issue, the discussion showed that the EU became increasingly isolated as also the G-77&China criticised the proposal because of the possibly negative impacts of the proposal on developing countries (both directly through their envisaged participation in policies and measures schemes in the EU proposal and indirectly through negative trade effects from implementing policies and measures in industrialised countries, such as reducing imports from developing countries). Other countries, such as the USA, Japan, and Australia, repeated their criticism on this issue and/or proposed weaker alternatives.

Despite its specific proposal for a QELRO, which was generally applauded, the EU was not able to 'steer' the agenda for the negotiations. On differentiation of targets, the EU had never been very clear, but it could not oppose the concept as it now had applied a burden sharing formula itself. In addition, on emissions trading, introduced by the USA, the EU did not present a clear view, except that it cautioned that purchasing allowances from other countries should not fully replace domestic abatement action. Particularly painful for the EU was that Chair Estrada had not copied any of the policies and measures priority options from the EU proposal (from the 200 options listed originally by the EU) in his "Framework Compilation of Proposals from Parties for the Elements of a Protocol or Another Legal Instrument" (UNFCCC, 1997a).

At AGBM-6 it became clear that Parties had generally accepted the principle of differentiation of QELROs among countries in order to take into consideration structural differences between countries. As explained above, the EU had applied differentiation internally and also the USA agreed on including differentiation as an option in the negotiation text (up to then the US delegation had been in favour of a flat rate target with emissions trading as an instrument to even out cost differences between countries). Parties only had to sort out how to apply differentiation for which basically two options existed: either formalise differentiation using criteria and indicators (formula-based or selective approach), or 'simply' leave it to negotiations (negotiation approach). During the AGBM-6 talks, Parties slowly seemed to move towards the latter approach, mainly for practical reasons, or, as a German delegate put it: "indicators do not necessarily reflect political reality" (Earth Negotiations Bulletin, 1997d, p. 7). The proposals submitted to AGBM-6 revealed an increasing preference for a top-down approach with an aggregate target for Annex I Parties which Parties would need to allocate among each other through negotiations.

Perhaps the biggest issue at AGBM-6 was 'flexibility': to what extent could Annex I Parties with QELROs acquire emission reduction credits from abroad through JI projects and emissions quota trading? This debate focused largely on the geographical scope for JI and on the extent to which Parties could apply these flexibility mechanisms to comply with their QELROs. Several Annex I Parties proposed JI cooperation both among Annex I Parties and between Annex I and non-Annex I Parties. The latter was opposed by the G-77&China which even proposed deleting the text on JI from the Chair's compilation text. Developing countries again urged Annex I Parties to first show demonstrable progress with reaching their stabilisation objectives for the year 2000, as in the UNFCCC. The G-77&China and also the EU argued that acquiring emission reduction credits or emission allowances from abroad should not entirely nor largely replace required domestic abatement action in industrialised countries.

Chair Estrada announced that he would distribute a draft negotiation text for a legal instrument by 1 June 1997 before the final round of the AGBM process (Earth Negotiations Bulletin, 1997d, p. 7).

AGBM-7, Bonn, Germany, 31 July – 7 August 1997

Less than half a year before COP-3, the time had come to make compromises between negotiation positions of countries. The EU increasingly gained support for its internal 'bubble system' presented at AGBM-6 (a common goal, differentiated among EU Member States), also from the USA which had long been in favour of a flat emission reduction rate. 'In return', the EU supported the US proposal for emissions trading among Annex I Parties, provided that the eventually adopted targets at COP-3 would be sufficiently 'adequate' for fulfilling the Berlin Mandate.

However, the EU, again, failed to gain support for its proposals for legally-binding policies and measures for Annex I Parties. The USA had always been against this proposal and several other Annex I Parties also objected to mandatory lists of policies and measures, as they wanted flexibility in shaping their domestic policy packages. In addition, the G-77&China (in particular the OPEC countries) repeated their argument that the EU proposal, which also contained a provision for policies and measures on a voluntary basis for developing countries, might induce negative trade effects for (some) developing countries.

Finally, AGBM-7 was to some extent overshadowed by the domestic political debate within the USA, which had resulted in a strong support for the resolution sponsored by Senators Byrd and Hagel by the House of Representatives and the Senate (in July 1997, shortly before AGBM-7) (Byrd & Hagel, 1997).[39] The Byrd-Hagel resolution stated that "the United States should not be a signatory to any protocol to, or other agreement regarding, the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto in December 1997, or thereafter, which would...mandate new commitments to limit or reduce greenhouse gas emissions for the Annex I Parties, unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for Developing Country Parties within the same compliance period". Senator Byrd personally contacted Chair Estrada to explain US domestic objections to unilateral commitments by industrialised countries.

However, the above does not imply that there was a sharp dividing line between the 'Byrd-Hagel' mandate and the official US position at AGBM negotiations. Throughout the entire process since 1995, the US delegation had argued in favour of commitments for or meaningful participation by developing countries and it had proposed including a section in a legal instrument on 'evolution', *i.e.* to actively involve developing countries in a climate regime at the shortest possible notice. The difference was mainly in the wording and the proposed procedures: 'immediately' (Byrd-Hagel) versus 'in an evolutionary process' (US negotiators).

Although several Annex I Parties in principle supported the US position on 'meaningful participation' by non-Annex I Parties (*e.g.*, the EU wanted developing countries to adopt some GHG abatement

[39] The Byrd-Hagel Resolution was sponsored by Senator Robert Byrd (Democrat, West Virginia) and Senator Chuck Hagel (Republican, Nebraska) and expressed the sense of the Senate regarding the conditions for the US becoming a signatory to any international agreement on GHG emissions under the United Nations (Passed by the Senate 95-0) (105th CONGRESS 1st Session S. RES. 98) (Byrd & Hagel, 1997).

policies and measures), the general view was that preparations for commitments for 'industrialising developing countries' in a climate regime should not be started within the context of the Berlin Mandate, *i.e.* 'yes' to evolution of developing country participation, but not yet.[40] Consequently, Chair Estrada literally stuck to the Berlin Mandate ('no new commitments for non-Annex I Parties') (UNFCCC, 1995a) and left the US proposal on 'evolution' out of the draft negotiating text.

AGBM-8, Bonn, Germany, 23-31 October 1997

About a month before COP-3, the negotiations were approaching a climax, particularly because key Annex I Parties had submitted their proposals for QELROs. AGBM-8 also made clear that the real negotiations were actually taking place outside the 'Bonn context', via bilateral talks through various 'shuttle diplomacies'. The US delegation visited EU Member States to sort out issues before the Kyoto summit, the EU troika met with US government officials and leading senators on the issue of climate change, and Japan, being the host of COP-3, had regular contact with the US administration and EU leaders when submitting its proposal for a legal instrument to AGBM (see below).

Shortly before AGBM-8, US President Clinton had announced the US proposal for a legal instrument on climate change (Earth Negotiations Bulletin, 1997a, p. 3). It contained a stabilisation target for the USA at 1990 levels for six GHGs to be achieved during the period 2008-2012. In addition, the proposal called upon developing countries to participate in a meaningful way, although it did not refer to an evolutionary process, which at ABGM-7 had turned out to be controversial. Finally, the USA proposed inclusion of JI among Annex I countries and with developing countries, as well as emissions trading among Annex I Parties.

The G-77&China criticised the US proposal as, in their view, it was in conflict with the Berlin Mandate (based on arguments they had elaborated on at earlier AGBM sessions, see above). Chair Estrada tried his best to find compromises in this respect by suggesting a more general discussion at COP-3 on the future participation of developing countries in quantitative target regimes, but to separate such a debate from the Berlin Mandate negotiations. He also considered including terms of references for JI cooperation with developing countries in the draft negotiating text, *i.e.* only projects leading to a transfer of sustainable (energy) technologies to developing countries would be eligible in JI cooperation between Annex I and non-Annex I Parties. Moreover, Estrada considered including a paragraph on voluntary participation of developing countries in an emissions trading regime (Earth Negotiations Bulletin, 1997a, p. 5).

On differentiation, Parties expressed different opinions on how to achieve differentiated targets (note that the question of 'whether differentiation' seemed to have been affirmatively answered at AGBM-7). Again, Parties discussed bottom-up and top-down options. The EU (in favour of a top-down approach) feared that focussing on a methodological agreement first (supported by Australia, Japan, and Norway) could lead to situations in which all Annex I Parties claim exceptional domestic circumstances to be included in the calculations which could eventually result in a strongly watered down overall Annex I target.

[40] Of the non-Annex I Parties, Brazil proposed at AGBM-7 that in the future all countries should adopt commitments (Earth Negotiations Bulletin, 1997c, p. 3).

Finally, Japan's proposal contained several elements for a compromise on this issue. It suggested an overall Annex I Parties' emission reduction target of at least five percent with scope for differentiation. Realising that the Japanese delegation had been in close contact with at least the EU and US delegations for some time before AGBM-8, it was generally assumed that the Japanese proposal more or less showed the scope for manoeuvre at COP-3.

COP-3 (Kyoto, Japan, 1-11 December 1997) was preceded by the resumed session of AGBM-8. At this meeting, which took place on 30 November, Chair Estrada wanted to complete the AGBM report to the COP, which consisted of an inventory of issues to be resolved by COP-3 and a draft negotiation text (UNFCCC, 1997b). While concluding that the AGBM had not reached agreement on a protocol or legal instrument text, the report was submitted to the COP Presidency.

3.3.3. COP-3

At COP-3, the negotiations on a legal instrument continued in the so-called Committee of the Whole.[41] From the AGBM process a list of articles had been suggested for the instrument and several alternative formulations for each article were available from proposals by Parties, as well as texts containing proposed compromises by the AGBM Chair. Keeping in mind how the AGBM negotiations had taken place, it was no surprise that most attention at COP-3 was paid to the draft-Articles 2 (policies and measures), 3 (QELROs, sinks, emissions trading, clean development fund), and 10 (voluntary commitments for non-Annex I Parties).[42]

The final discussion on policies and measures went rather smoothly, which seemed largely due to the fact that during the last sessions of AGBM the EU had made considerable concessions. For example, it had reduced its list of policies and measures to a priority list. The text adopted at COP-3 stated that under Article 2 of the Protocol each Annex I Party shall "implement and/or further elaborate policies and measures in accordance with its national circumstances" (Kyoto Protocol Article 2.1(a)). Furthermore, the Article lists a number of possible policies and measures that Parties could implement/elaborate. There was no consensus to include a reference to activities by non-Annex I Parties in this respect, although it was noted that Annex I Parties should strive to minimise adverse effects on, among others, developing country Parties. The text did not arrange co-ordination of policies and measures among Parties, but left it to future sessions of the COP (serving as the meeting of the Protocol Parties) to take further decisions if required.

All in all, the final outcome of the negotiations on policies and measures substantially deviated from the original EU proposal which had a stronger legally-binding nature and included limited participation of developing countries.

The COP-3 discussions largely focussed on the proposed Article 3. Already during the AGBM process, QELROs, whether and how to differentiate these, and what flexibility to offer Annex I Parties in terms of accounting (one GHG or a multiple gases approach), location and timing had been

[41] The Committee of the Whole is sometimes established within the context of the COP to negotiate on a particular topic and consists of the same membership as the COP. When the Committee has finished its work, it turns the text over to the COP, which finalises and then adopts the text during a plenary session (UNFCCC, 2014g).

[42] Note that throughout the Kyoto discussions Parties generally referred to a protocol instead of a legal instrument. 'Protocol' also appeared in Estrada's negotiation text (UNFCCC, 1997b).

intensively debated. At COP-3 the issue of including carbon sinks in the Article was added to the list of issues. Already at AGBM-7, some delegates had pointed out that including carbon sinks (*e.g.*, sequestration of carbon in soils and trees) in a legal instrument would greatly affect the capacity of countries to comply with their QELROs. The Brazilian delegation presented a calculation which showed that a broad inclusion of sinks in Article 3 would reduce required aggregate Annex I Parties' efforts by around 30% (Earth Negotiations Bulletin, 1997b, p. 7).

On sinks, an informal group explored possible options for including carbon sequestration through forestry and land use in the protocol text. The options could be broadly categorised as 'immediate inclusion' or 'future inclusion' (Earth Negotiations Bulletin, 1997b, p. 7). The latter would depend on progress with addressing methodological uncertainties regarding accounting of sequestered carbon. The 'sinks group' reported that the 'future inclusion' option would bring the best chances for a compromise, but within the Committee of the Whole there was strong pressure from several Annex I Parties to include as many sinks options as verifiable. The text that was eventually adopted in Article 3 described how Annex I Parties should include in their national GHG accounting the net changes in GHG emissions since 1990 due to human-induced land use, land-use change and afforestation, reforestation and deforestation activities (Article 3.3 of the Protocol).

The debate on QELROs took place in a 'top down' context after Chair Estrada[43] had submitted his 'big bubble' proposal with an aggregate 5% emission reduction target for Annex I Parties (Earth Negotiations Bulletin, 1997b, p. 7). In this proposal, the EU was to reduce its emissions by 8% below 1990 levels during a proposed commitment period of 2006-2010 (note that before AGBM-6, the EU had proposed to collectively reduce its emissions by 15%). Estrada proposed a -5% target for Canada, the Russian Federation, the USA, and Ukraine, and -4.5% for Japan. Countries like Australia and Norway had to limit their GHG emissions to 5% above 1990 levels. The differences in targets in Estrada's proposal were a reflection of different national circumstances of the Parties (*e.g.*, large reliance on renewables, or strong coal sector), although no formal method for differentiation as proposed at a number of AGBM sessions (*e.g.*, Australian proposal) had been used for this. Note that the 'big bubble' contained targets for three GHGs only (CO_2, CH_4, and N_2O).

Informal discussions persuaded the Chair to make several adjustments to his proposal, especially with respect to flexibility, the number of gases covered, delaying the commitment period to 2008-2012, and voluntary commitments for non-Annex I Parties. Within the COW context on the last day of the COP, when negotiations continued 'round the clock', the Russian Federation and Ukraine expressed their dissatisfaction with the differentiated targets because they did not reflect both countries' proposals to stabilise their GHG emissions at 1990 levels. Eventually, Article 3 was adopted with quantified emission reduction or limitation commitments (QELRCs) defined and listed in Annex B to the Protocol. On aggregate, Annex I Parties agreed to reduce their GHG emissions (for six gases, listed in Annex A of the Kyoto Protocol (UNFCCC, 1998)) by 5.2% during the period 2008-2012 (the so-called first commitment period). These commitments are defined as assigned amounts, which are expressed as a percentage of Annex I Parties' GHG emissions levels of 1990. For example, a Party with an assigned amount in Annex B of 93% must reduce its emissions by 7%.

[43] AGBM Chairman Raúl Estrada Oyela was also elected COW Chair at COP-3.

Annex I Parties were allowed further flexibility in terms of location through JI, the CDM and International Emissions Trading (see Chapter 4 for the negotiations leading towards the inclusion of these mechanisms). The surprising inclusion of the three flexibility mechanisms in the Protocol cannot be seen in isolation from the hectic negotiations during the second week of COP-3. The US delegation had hold on a stabilisation target during the first week of COP-3, but was openly instructed to show more flexibility during negotiations from the administration when US Vice-President Al Gore addressed the COP in person at the beginning of the second week. The open willingness of the USA to accept an emission reduction commitment was accompanied by US pressure for more flexibility in terms of emissions trading and broadening the JI concept towards collaboration with developing countries (for which the CDM was created).

On meaningful participation of developing countries, however, the US delegation did not achieve what it intended. Throughout the AGBM process, this issue had been extremely sensitive, both in terms of voluntary quantified targets and in terms of adopting policies and measures. The G-77&China demonstrated a strong determination to literally stick to the text of the Berlin Mandate and did not allow any margin for interpretation in this respect. It repeatedly argued that developing countries would only consider adopting targets and/or policies and measures once Annex I Parties had demonstrated real progress with meeting UNFCCC targets.

According to the *Earth Negotiations Bulletin*, the key negotiators of the G-77&China group effectively defeated the original Article 10 in the draft protocol: "in a clever play, India and China led off a debate on emissions trading, ambushing the US and JUSSCANZ and succeeding in delaying the pace at which trading will come into effect. In doing so in the closing hours of the negotiations, they signalled decisive opposition to the Article on voluntary commitments and exhausted all proponents. As a result, the article on voluntary commitments was dropped"[44] (Earth Negotiations Bulletin, 1997b, p. 15).

On Thursday, 11 December 1997 the Kyoto Protocol was adopted.

3.4. Post-COP-3 Negotiations on Protocol Modalities and Procedures

The discussion of the negotiations in the Berlin Mandate context has made clear that a relatively small group of Parties played a key role in shaping the final text of the Kyoto Protocol. The G-77&China strictly opposed attempts from some industrialised countries to incorporate commitments for non-Annex I Parties, either as voluntary policies and measures or as flexible emission budgets, and thus lost their strength to otherwise influence the negotiations. Several institutional elements of the Kyoto Protocol were taken from the US proposals – *e.g.*, emission budgets, national quota emissions trading, project-based emissions trading with developing countries, multiple gases and a multi-year commitment period – whereas, on the other hand, the US delegation managed to remove the legally-binding status from the EU-proposal on policies and measures. This lower profile for policies and measures was a disappointment for the EU, which had spent much effort on precisely this element.

[44] JUSSCANZ was an acronym for a group of Parties with Japan, the USA, Switzerland, Canada, Australia, Norway and New Zealand. At later negotiation, JUSSCANZ became part of the Umbrella Group (see Box 2-1).

However, the EU softened the disagreement between the USA and G-77&China on legally binding commitments for developing countries by literally sticking to the text of the Berlin Mandate. The EU strongly influenced the debate on differentiation of commitments, a concept which it initially seemed to oppose but suddenly applied in practice itself through the March 1997 burden sharing agreement among the EU Member States. Finally, Japan perhaps showed more flexibility during the negotiations because of its status as host of COP-3.

These Parties continued to play their key roles also after the adoption of the Kyoto Protocol when negotiations focussed on working out its operational details (these negotiations took place from 1998 through early 2005 when the protocol entered into force). The analysis of the post-1997 negotiations in this section will focus on themes and key players rather than on a chronological description of negotiation sessions. The main reason for this approach is that, contrary to the Berlin Mandate negotiation process, the 1998-2005 negotiations were largely characterised by (high-level) bilateral meetings between key Parties (sometimes even in the context of other multilateral meetings such as of the World Trade Organisation, WTO). These diplomatic meetings of country representatives between the official UNFCCC sessions turned out to be almost as important as the discussions inside the official negotiations room. A focus on negotiation sessions alone would thus only cover part of the story.

COP-3 recognised that the Kyoto Protocol, despite being a much more specific treaty than the UNFCCC, still needed further decisions on specific modalities and procedures for its operationalisation. For instance, the inclusion of land-use (change) and forestry in Article 3 had opened the way for Annex I Parties to also include carbon sequestration achievements in their emission budgets. The Kyoto Protocol had not yet defined how and to what extent this should be included, *e.g.*, what type of forestry (afforestation and/or forest conservation) and how to define land use and land-use change? Furthermore, the Kyoto Protocol opened a large new debate on the so-called flexibility mechanisms JI, CDM and International Emissions Trading, which will extensively be discussed in Chapter 5. Finally, COP-3 did not really resolve the issue of compliance, *i.e.* would the Protocol generate enough incentives for Parties to comply with their commitments or should additional measures (*e.g.*, sanctions and compensation) be included?

The process of developing modalities and procedures for the Kyoto Protocol was, however, largely overshadowed by the problems that arose when, in March 2001, US President George W. Bush decided not to support the protocol. He considered the Protocol ‘fatally flawed’ because it did not contain quantified commitments for rapidly industrialising developing countries such as China, India, Mexico, Brazil and South Korea. Moreover, the protocol would require an emission reduction effort from the USA which could, in the view of the Bush Administration, strongly disrupt the US economy (by 2001 US GHG emissions had grown to over 15% above 1990 level, whereas the country had to reduce its emissions by 7% by 2008-2012 under the Kyoto Protocol (US EPA, 2011)).

Note, however, that the decision of the Bush Administration could not be considered a sudden change in the US governmental position concerning a global climate policy. First of all, earlier in this chapter, the Byrd-Hagel resolution of 1997 has been mentioned, as well as the pressure placed on AGBM Chair Estrada by US Government officials before ‘Kyoto’ to include ‘meaningful participation by developing countries’ in the protocol next to Annex I Party commitments. Second, prior to COP-6, US Government officials, when meeting with the Dutch Presidency of COP-6, made clear that for US

ratification of the Kyoto Protocol it would be extremely important that the issue of 'meaningful participation by developing countries' were placed on the agenda. Between COP-3 and COP-6, the USA tried at least five times to include this issue in the agenda for negotiations, without the desired result (Earth Negotiations Bulletin, 2000d, p. 2) (Viguier, 2003). In fact, the Dutch Presidency of COP-6 argued, based on its pre-COP bilateral meetings with developing country representatives, that adopting a decision on 'meaningful participation' at COP-6 would not be realistic and thus left it out of the agenda.

The US decision to withdraw from 'Kyoto' posed a serious threat to the Kyoto Protocol. For its entry-into-force the protocol needed to be ratified by a number of Annex I Parties, which would be sufficiently large to cover a minimum of 55% of Annex I Parties' overall CO_2 emissions in 1990. Early 2001, the EU had already expressed its readiness to ratify the protocol, but for reaching the 55% threshold also ratification by the Russian Federation (17.4%), Japan (8.5%), Canada (3.3%), and Australia (2.1%) was very important (see Table 3-1). As a result, the US shift in position suddenly increased the negotiation power of these four countries in the remainder of the process.

Table 3-1. Percentage of Annex I emissions in 1990 – Article 25 of the Kyoto Protocol*

USA	36.1
EU	24.2
Russian Federation	17.4
Japan	8.5
Canada	3.3
Poland	3.0
Australia	2.1
Czech Republic	1.2
Romania	1.2
Bulgaria	0.6
Hungary	0.5
Slovakia	0.4
Estonia	0.3
Norway	0.3
Switzerland	0.3
Latvia	0.2
New Zealand	0.2
Other Annex I Parties	2.2
Total Annex I	100.0

* This list does not include Ukraine which, by 1997, had not yet submitted its national communication on 1990 emissions. Therefore, its emissions are not included in the Table annexed to Article 25 of the Protocol. The Ukrainian ratification of the Kyoto Protocol therefore had no effect on the entry-into-force of the Protocol (UNFCCC, 1998, pp. 18, Art.25).

The role of the G-77&China became less important as their emissions did not count for reaching the 55% threshold, whereas they strongly supported the Kyoto Protocol and showed willingness to accept special wishes of some industrialised countries which could even reduce the environmental integrity of the protocol (see below). Consequently, the negotiations during 2001-2005 did not focus so much on how to include developing countries in a climate policy regime (as had been the case during 1995-

1997), but on how to persuade key industrialised countries to continue their support to the Kyoto Protocol. In this process, the EU eventually played a key, if not decisive, role.

EU: shift in negotiation strategy

Although the Kyoto Protocol deviated on several points from the EU proposals submitted during AGBM negotiations, the EU remained a strong supporter of the protocol throughout the period 1997-2000. During negotiations at COP-4 through 6, the EU delegations tried to identify a number of issues in the protocol to support the environmental integrity of the package. For example, the EU was strongly in favour of defining the term 'supplementarity' in relation to using the Kyoto flexibility mechanisms. The protocol states that Annex I Parties' use of JI, CDM and emissions trading should be supplemental to their domestic activities (UNFCCC, 1998, pp. 6-7, Art.6.1(d) & 11-12, Art.12.3(b)), without specifically determining which part of the commitments could be covered by emission-reduction credits acquired from abroad.

In the course of 1999, the European Commission and the EU Council of Environment Ministers developed a formula which would limit the use of the Kyoto flexibility mechanisms to about 50% of Parties' abatement effort under the Protocol (Zhang, 2001). This ceiling approach was heavily criticised by the so-called Umbrella Group,[45] which wanted freedom for each Annex I Party to define its own supplementarity rules (for a detailed discussion on this issue, see Chapter 5). The main rationale for the EU to propose a ceiling was that it feared that a large use of the flexibility mechanisms would crowd out domestic abatement efforts in industrialised countries. On this topic the EU was strongly supported by the G-77&China. In addition, the EU argued that the use of the flexibility mechanisms was surrounded by several methodological uncertainties (such as baseline determination and additionality, see Chapter 5), which would need to be addressed first.

Furthermore, the EU wanted to limit the scope for using land use, land-use change and forestry (LULUCF) activities in support of Annex I Parties' compliance efforts. Especially during the year 2000, at the SB-sessions in June (Bonn, Germany) and September (Lyon, France) and at COP-6, the US delegation had opened the debate by proposing to also consider improved agricultural harvesting techniques in Article 3.3, the use of which would reduce the release of carbon from soils. The EU delegation argued, in a reaction, that a broad interpretation of LULUCF would enable several Annex I Parties to largely avoid energy and industrial sector emission reductions, and doubted whether there was already enough scientific evidence on the permanence of LULUCF abatement options (see Chapter 5).

Throughout the period 1998-2000, the EU thus tried to counterweigh the more flexible attitude of the Umbrella Group (especially the USA) towards the modalities and procedures of the Kyoto Protocol. As the *Earth Negotiations Bulletin* wrote in 1997, when anonymously quoting a US delegate: "the EU had more fun in being green than in being practical" (Earth Negotiations Bulletin, 1997b, p. 15). This difference of opinion eventually resulted in the failure to reach agreement at COP-6 on a text on LULUCF measures (November 2000), which forced the Dutch COP Presidency to suspend the meeting to July 2001.

[45] The Umbrella Group was the new name of the former JUSSCANZ group (see footnote 44 and Box 2-1).

After the US withdrawal from the Kyoto Protocol process, however, a significant change in the EU negotiation position could be observed. Concerns about the entry-into-force of the protocol stimulated the EU troika to start an intense diplomatic campaign in March 2001,[46] which led to a number of bilateral meetings with Australia, Canada, Japan, the Russian Federation, and the G-77&China delegations. An important observation from this period is that the EU showed much more coherence than before when disagreements among Member States regularly led to weaker EU positions at negotiation sessions (Hyvarinen, 2000). After March 2001, the EU showed a strong unanimous determination of rescuing the Kyoto Protocol. Eventually, at COP-6 *bis* in Bonn, Germany (July 2001), the EU efforts paid off as Parties reached consensus on the Bonn Agreement, which was generally considered the rescue of the Kyoto Protocol.

Bonn Agreement

Strikingly, the Bonn Agreement was much 'less green' than the EU proposals for modalities and procedures before the US withdrawal. For instance, at the resumed session of COP-6, Canada, Japan and the Russian Federation had proposed a methodology for negotiating maximum levels of forest management abatement credits that individual Annex I Parties would be able to take into account when calculating achieved GHG abatement under the Kyoto Protocol (Earth Negotiations Bulletin, 2001, p. 7). These levels were defined in a new Appendix Z to the Protocol's Article 3.4.[47] The Bonn Agreement consequently allowed Annex I Parties a larger use of LULUCF activities in complying with the protocol commitments which was especially beneficial for Canada, Japan and the Russian Federation. 85% of the overall maximum credits level in Appendix Z consisted of these countries' forest management credits.

It was unavoidable to link this additional flexibility to Canada, Japan and the Russian Federation with the EU's efforts to gain these countries' support to the Kyoto Protocol. In the closed negotiation group on LULUCF, which met at COP-6 *bis* from 16 through 18 July 2001, the delegates of the three countries had emphasised that LULUCF was fundamental to their ratification of the Protocol (Earth Negotiations Bulletin, 2001, p. 13). In the LULUCF debate, the EU not only accepted a wider definition and use of forestry and land-use GHG abatement, it even contributed to the negotiations through a model with which the consequences and opportunities of using forest management could be directly estimated.[48] It was widely concluded that the larger flexibility in the LULUCF debate had been a "beneficial trade-off for keeping the Protocol alive" (Earth Negotiations Bulletin, 2001, p. 14).

An even stronger example of how the US withdrawal from the Kyoto process affected the environmental integrity of the Protocol could be found in the debate on compliance. At COP-6 in November 2000, in The Hague, Parties were quite close to an agreement on a compliance regime under the Kyoto Protocol that would legally bind non-complying Parties to a compensation of the

[46] The EU troika is formed by the representatives of: the country that chairs the EU Council of Ministers during a particular semester, the country that chaired during the former semester and the country that will be next chair.

[47] Appendix Z determined for each Annex I Parties a percentage of their national inventory of achieved GHG abatement that could be realised through carbon sequestration in domestic forests. This percentage was meant as a cap in order to prevent that forestry activities would crowd out domestic energy efficiency and conservation activities (Caparrós & Jacquemont, 2005).

[48] The author of this study was member of a team to assist the European Commission in exploring, through a series of modelling run, what would be the implications of different policy proposals on LULUCF.

'environmental damage' caused by their non-compliance, *e.g.*, through payments. The EU and the G-77&China, supported by the USA, were then in favour of strong compliance measures, whereas Australia, Japan and the Russian Federation proposed a compliance regime based on 'environmental integrity' rather than based on 'reparation of damage.' (Earth Negotiations Bulletin, 2000a, p. 10)

In The Hague, the latter position was clearly a minority point of view, but at the resumed COP-6 session six months later, this situation had changed. Now, without the support of the USA, the EU and the G-77&China had less negotiation power to move their strict compliance proposals forward and Australia, Japan and the Russian Federation cleverly managed to re-open the compliance debate. Eventually, negotiators needed a marathon session, which lasted from Saturday 21 July through Monday morning 23 July 2001, to settle the compliance issue, which had turned out to be the major obstacle for reaching the Bonn Agreement. The result was that, instead of 'reparation payments', Parties agreed that Annex I Parties who surpass their assigned amounts would have to carry out extra abatement efforts in a future, post-2012, commitment period. This extra effort would amount to 1.3 times the excess emissions from the Party's first commitment period assigned amount (Earth Negotiations Bulletin, 2001, p. 8).

Consequently, the compliance regime agreed at COP-6 *bis* was much weaker than initially envisaged by the EU and the G-77&China and the majority view at COP-6. For instance, although the required extra effort during a future commitment period was presented as an incentive for present compliance, it could also easily be interpreted as an elegant way to postpone abatement action to the future. This interpretation was especially relevant when assuming that future commitments would be negotiated in a similar way as during the Berlin Mandate process. In other words, a country realising that it will overshoot its Kyoto Protocol cap has an incentive to negotiate a higher future assigned amount so that the required extra abatement effort (1.3 times the excess emissions) can be compensated by a more flexible future target.

Russian hesitation

After the Bonn Agreement and Marrakech Accords in 2001, the entry into force of the Kyoto Protocol was still uncertain, even though the countries with a potentially decisive vote, especially Japan, the Russian Federation (together responsible for about a quarter of Annex I Parties' 1990 emissions), Australia and Canada, had been offered considerable concessions at the COPs in Bonn and Marrakech. After Japan's ratification of the Kyoto Protocol on 4 June 2002, the Russian Federation held the key to the entry into force of the protocol. Assuming that Annex I Parties in Central and Eastern Europe would ratify as they had indicated and which was likely to happen as most of these countries were candidates for EU Membership, the Japanese step raised the percentage of 1990 GHG emissions covered by ratification to over 40. For this percentage to surpass the 55% threshold, the 17.4% of the Russian Federation was needed, irrespective of whether Canada and/or Australia would ratify.[49]

Initially, during the 1990s, the Russian Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet) was responsible for the UNFCCC negotiations as climate change was long considered a mainly scientific or technical issue. The Kyoto Protocol changed this picture as the

[49] Canada (3.3% of Annex I GHG emissions in 1990) ratified the Kyoto Protocol on 17 December 2002; Australia (2.1% of Annex I GHG emissions in 1990) ratified on 12 December 2007 (UNFCCC, 2014a).

introduction of both quota and project-based emissions trading implied interesting business opportunities for the country. With its GHG emissions capped at 1990 levels and after having experienced a 35% GHG emission reduction below those levels, due to the strong economic decline during the 1990s (Government of the Russian Federation, 2013), the country realised in 1997 that it could earn a lot of money from selling surplus assigned amounts. This new political situation made the Russian Ministry of Economic Development and Trade a key player in the Russian debate on climate change policy (JIN, 2003a, p. 2). Understandingly, the US withdrawal from the Kyoto Protocol was a big disappointment for this Ministry as this strongly reduced potential international demand for Russian surplus assigned amount units and thus lowered projected and actual credit prices and revenues.[50] Without this big earning potential, climate change was no longer a priority issue for the Russian government, which basically stopped the ratification process.

However, under pressure of the EU and Japan, the Russian Government decided to analyse the impact on the Russian economy of joining the Kyoto Protocol (Henry & McIntosh Sundstrom, 2007). A key concern of the Government was the implication of President Putin's objective to double the country's GDP by 2010 compared with the year 1990. According to some Russian experts, this could easily lead to a larger use of relatively cheap and carbon-intensive fuels in Russian industrial processes (JIN, 2003a, p. 1). Consequently, increasing Russian GHG emissions would reduce the assigned amount surplus. Model simulations showed that due to a doubling of its GDP, Russia would exceed its 1990 GHG emission levels and turn into a buyer, not a seller, of emission reduction credits (Henry & McIntosh Sundstrom, 2007, p. 51) (Illarionov & Pivovarova, 2004).

Some Russian politicians, such as deputy prime-minister Viktor Khristenko, considered the Kyoto Protocol an opportunity to acquire sustainable energy technologies (JIN, 2003a, p. 1), but others, especially Putin's economic advisor Andrey Illarionov, strongly questioned the benefits for the Russian Federation from ratifying the Protocol (The Economist, 2003). Within the Government, the Ministry of Energy supported the Kyoto Protocol with a view to its potential contribution to improving energy conservation and reliability of energy delivery, particularly through JI. The Ministry of Economic Development and Trade, as explained above, lost interest in a Protocol without the USA and believed that ratification could only be supported if considered in the context of other multilateral agreements. However, perhaps the most important step in the ratification process would be the first one: a decision by President Putin to officially request the Cabinet of Ministers to take a decision on the Kyoto Protocol. Subsequently, in case of a positive decision, the documents had to be sent to both the Duma (lower house) and the Federation Council (upper house). Upon an endorsement by the Council, President Putin would have to sign and forward the ratification to the UN.

Eventually, the ratification process was halted until approximately May 2004. President Putin did not give any indication on his next steps when the Russian Federation hosted the World Conference on Climate Change (WCCC, September 2003). On the contrary, at a WCCC press conference, he even remarked, or joked, that climate change could have net benefits for the country in terms of higher

[50] In 1998, prices of Kyoto credits – JI and CDM project credits and assigned amount units – were expected to amount to approximately USD 20 per tonne CO_2-eq. (Jepma, et al., 1998). After the US withdrawal from the Kyoto process, project and actual prices (*e.g.*, JI/CDM tender programmes, see Chapter 5) dropped to approximately USD 5/tonne. According the Massachusetts Institute of Technology, the annual value of Russia's credits dropped from at least USD 10 billion per year to between USD 100 and USD 200 million per year (Bernard, et al., 2003).

agricultural revenues (Baker & McKenzie, 2003). Also, almost at the same time, Mr Vladimir Popatov, the Deputy Secretary of Russia's Security Council, in an article in the newspaper *Russian Gazette*, made a comparison with the Russian ratification of the Montreal Protocol, which, in his view, had been naïve and had led to serious economic disadvantages for the Russian economy (Baker & McKenzie, 2003). Finally, the Russian Government had expressed its disappointment over the €2 million in the form of technical assistance that the European Commission had promised in case of Russian ratification of the Kyoto Protocol. The 'Kremlin' repeatedly complained that the European Commission negotiated with moral arguments instead of tangible incentives (Baker & McKenzie, 2003).

By the time of COP-9 (Milan, Italy, December 2003), the perspective of Russian ratification had become very low, as Illarionov again explained to the climate 'community' why the Kyoto Protocol would only bring illusory benefits to his country (Walsh, 2003).

The first breakthrough, however, came on 21 May 2004 when the Russian Federation reached a bilateral agreement with the EU on future Russian membership of the WTO. Given the large trade flows between the EU and the Russian Federation, this agreement was extremely important for the Putin Administration. During the negotiations, the EU had softened its position regarding the artificially low energy prices in the Russian Federation, which it had always considered an important obstacle to a WTO agreement. At the press conference on the same day, Putin said that the positive outcome of the WTO negotiations with the EU "could not but have helped Moscow's positive attitude to ratification of the Kyoto Protocol" (The Boston Globe, 2004).

A second breakthrough took place on 30 September 2004 when the Russian Cabinet decided to send the Kyoto Protocol to the Duma for final debate and ratification. This decision followed Putin's re-election as President but also came after a month during which contradicting signals were heard from the Russian Government with the Minister of Foreign Affairs, Mr Lavrov, expressing doubts about the protocol's benefits and Prime Minister Mr Fadkov being in favour of ratification. The votes of the Duma and the Federal Council, which were dominated by the pro-Putin United Russia Party, were acquired relatively easily so that President Putin could send the Russian Federation's instrument of ratification to the UN Secretary General on 19 November 2004. Ninety days later, on 16 February 2005, the Kyoto Protocol entered into force.[51]

3.5. Discussion: Kyoto Protocol Negotiations in Light of Design, Process and Tactics Conditions

In this chapter the process leading to the agreement on the Kyoto Protocol in 1997 at COP-3 and its entry into force in 2005 has been discussed in a largely chronological order with specific attention to negotiation themes, country positions and dynamics. In this section, the negotiation processes will be disentangled with a view to whether and how the three basic conditions for successful climate negotiations, as identified in Chapters 1 and 2, have been met.

[51] Eventually, 192 countries ratified the Kyoto Protocol (UNFCCC, 2014a).

Meeting basic condition 1: Kyoto Protocol design

The key elements of the Kyoto Protocol design as it entered into force on 16 February 2005 were the following:

- The geographical **scope** of the protocol was clearly global. With its ratification by 192 Parties the Kyoto Protocol had a global coverage. During the negotiations the largest thematic focus was on GHG emission reduction efforts (mitigation); adaptation was discussed by Parties but was never really a crunch issue to 'make or break' a negotiation step.
- Among the key **principles** of the Kyoto Protocol is that of 'common but differentiated responsibilities.' This was reflected by the fact that only industrialised countries adopted quantified commitments under the protocol, so that the actual coalition of countries with quantified emission reduction or limitation commitments had a size of 36 countries (listed in Annex B of the protocol). The actual participation of developing countries in the protocol has been more indirect via their possible involvement in GHG emission reduction projects via the CDM or via, *e.g.*, technology transfer support programmes (such as technology needs assessments, see Chapter 7). Under the Berlin Mandate, some industrialised countries (mainly the USA) argued that also developing countries, especially those with rapidly growing economies, should adopt quantified emission reduction targets (even on a voluntary basis), but developing country negotiators managed to avoid this step at COP-3.
- **Differentiation** of responsibilities was also reflected in the different treatment under the UNFCCC and the Kyoto Protocol of industrialised countries. Industrialised countries who were, by 1992, member of the OECD (listed in UNFCCC Annex II) agreed: to provide new and additional financial resources to developing country Parties for meeting their obligations under UNFCCC Art.12 (communication of national inventories of GHG emissions by sources and removal of sinks); to assist vulnerable developing countries in meeting costs of adaptation to adverse climate change effects; and to support promotion, facilitation and finance of environmentally sound technologies to developing countries (UNFCCC, 1992a, pp. 13-14, Art. 4.3-5). Other industrialised countries, mainly the former centrally planned economies in Central and Eastern Europe, were not included in Annex II and thus exempted from these support actions.
- The main **goal** towards mitigating GHG emissions in the Kyoto Protocol was that all industrialised countries would jointly reduce their emissions by 5.2% during the commitment period 2008-2012 compared to emission levels in 1990. This common goal was built up by individual country goals as specified in Annex B. As explained in this chapter, the overall target and the differentiation of country targets was not based on scientific analysis; rather, it was the result of negotiation dynamics during the last days at COP-3. Having a longer term target (scheduled to be achieved ten to fifteen years after 1997), however, made it difficult for countries to clearly assess what would be the economic costs and other consequences of the negotiation results at 'Kyoto'. As explained by, among others, Oikonomou, et al. (2014) based on an assessment of six European environmental policy case studies, policy planning requires that policy makers make well-informed assumptions about factors such as the socio-economic and political policy context, the policy design and implementation process and possible interactions with other (environmental) policy areas and instruments. The longer the timeframe of a target, the more difficult it becomes to make such assumptions and the more likely it becomes that policy

realisations deviate from anticipated targets. Moreover, there could be a risk of non-compliance by Parties should it become clear over time that compliance costs become too high. In order to reduce this risk, the Kyoto Protocol aimed at a five-year commitment period so that compliance costs could be spread across multiple years.

- The Kyoto Protocol introduced a number of **policy instruments** to enable countries to comply with the protocol goals. The key instrument for determining quantitative commitments for industrialised country Parties was that of annually assigned amounts of GHG emissions per Party (*i.e.* maximum emission levels). These assigned amounts were tradable so that Parties with surplus assigned amounts could sell these to other Parties with a deficit. To their assigned amounts, Parties could add credits which had been derived from JI and CDM projects in other industrialised countries or in collaboration with developing countries. With these two mechanisms, it was aimed to increase the 'surplus' for industrialised countries to join the Kyoto Protocol coalition as it would enable them to broaden their assigned amounts with relatively low-cost mitigation options in other countries.
- Next to the **geographical flexibility and flexibility in terms of timing** for industrialised country Parties to fulfil their commitments, the protocol also included **flexibility in terms of commitments across multiple GHGs**. Instead of considering only CO_2 emissions, assigned amounts were expressed in CO_2-equivalents based on six GHGs as listed in Annex A of the Kyoto Protocol. Moreover, emission reductions achieved in terms of any of these GHGs would count against staying below countries' assigned amounts (also when using JI and CDM credits for that, see next chapters). Finally, flexibility was introduced under the protocol, and further broadened after US withdrawal from the protocol, through accounting of GHG emission reductions achieved with land use, land-use change and forestry measures.
- With these forms of flexibility the Kyoto Protocol offered a wider scope for industrialised country Parties to **lower compliance costs** as they could choose where GHG reduction measures would be relatively cheap, when taking actions would be most beneficial and which GHGs would be most efficient to focus on to achieve the protocol's effectiveness requirements.
- The **compliance regime** developed under the Kyoto Protocol to enforce industrialised country Parties to comply with their quantified commitments was relatively weak. By requiring non-complying Parties to make extra efforts during a second commitment period of the Kyoto Protocol, countries could in principle postpone actions until after 2012. A relatively strict compliance measure introduced in the Kyoto Protocol was that countries could be excluded from JI project cooperation and international emissions trading if they did not have in place their GHG inventory and reporting systems (see Chapter 5).

In terms of environmental integrity, the Kyoto Protocol was criticised by, for instance, environmental NGOs which called the Bonn Agreement a 'Kyoto lite' agreement (Earth Negotiations Bulletin, 2001, p. 13). Moreover, of the initially envisaged GHG emission reductions in the Kyoto Protocol, only 17% was left due to the larger scope for sinks and the US withdrawal in 2001 (Elzen, 2002). It could therefore be argued that the Kyoto Protocol design had lost part of its environmental integrity while trying to keep the Umbrella Group countries on board (Dessai & Schipper, 2003).

In conclusion, the Kyoto Protocol negotiation process resulted in a design which limited GHG emission reduction commitments to the relatively small group of industrialised countries. As GHG emissions of developing countries were not capped by the protocol, the growing emissions of rapidly

industrialising developing countries remained unaddressed. As a compensation, the net quantified abatement targets that industrialised countries faced (emission reduction with inclusion of accounting of carbon sequestration through LULUCF) were relatively low, with a rather weak compliance regime and a large scope for using the Kyoto flexibility mechanisms. At the same time, through the flexibility mechanisms (in particular the CDM), the Kyoto Protocol design enabled an almost global scope for GHG emission reduction measures.

In terms of the negotiation framework described in Chapter 1, Figure 1-3, this chapter has shown how initially the design of the Kyoto Protocol moved to outcome B when it was realised that only quantitative commitments for industrialised countries were feasible. The turn towards outcome C, with increasing support by Annex I Parties, was made by introducing in the protocol design, among others, the concept of GHG emissions trading (including JI and CDM). The end point D was achieved by, among others, acknowledging that CDM projects would need to contribute to developing countries' development priorities and enabling compliance with Annex I Parties' commitments through a broader set of carbon sequestration options (including land use and land-use change, see Chapter 5 for a more detailed discussion on this), so that the protocol could be supported by consensus.

The deviation between D and 'ideal' situation A (in the hypothetical situation of Figure 1-3) remained in the final Kyoto Protocol package, because: compliance procedures were weak, rapidly industrialising non-Annex I Parties were not included in the list of countries with quantified commitments, the 5% emission reduction target was not derived from scientific evidence but the result of negotiations, and the scope for accounting GHG emission reductions through LULUCF activities was considerably extended, so that fewer incentives remained to reduce GHG emissions in energy and industrial sectors in industrialised countries.

Therefore, in terms of whether basic condition 1 has been met during the Kyoto Protocol negotiations, it can be concluded that the negotiations managed to successfully consider the key principles of the UNFCCC and to address the several game theoretical aspects of country behaviour (meeting the condition). However, in terms of whether the negotiations (between 1995 and 2005) produced a protocol design for which it could be anticipated that it would strongly reduce GHG emissions in main emitting sectors in industrialised countries, it is concluded that the basic condition 1 was not fully met for the Kyoto Protocol, as the final design contained too many uncertainties regarding costs, compliance and GHG accounting strictness.

Meeting basic condition 2: Impact of negotiation process under the Berlin Mandate on Kyoto Protocol agreement

The negotiation process leading to the Kyoto Protocol in 1997 and its entry-into-force in 2005 began officially in March 1995 when the first COP was held. From then on, an intense negotiations trajectory took place which had the following key characteristics:

- Parties to the UNFCCC met annually at sessions of the COP to **take political decisions** at the highest political UNFCCC level. The COP process was supported by meetings and more technical negotiations in the framework of the UNFCCC subsidiary bodies SBSTA and SBI. In addition, for the development of the Kyoto Protocol the COP formulated a mandate (Berlin Mandate) and Parties negotiated under this mandate through an ad-hoc working group, AGBM,

which met on average twice a year. During 1995-1997, the COP, supported by SBSTA/SBI, worked on implementation of the UNFCCC (focussing on issues such as: GHG emission stabilisation, JI pilot projects under AIJ, adaptation, capacity building, technology transfer and finance), whereas AGBM solely focussed on protocol negotiations. Therefore, these processes were largely kept separate whereby AGBM formally reported to the COP.

- During the AGBM process, as well as before 1992 during the negotiation process towards a UNFCCC agreement, **the first meetings mainly focused on organisational or procedural matters**, which were followed at later sessions by discussions on more fundamental issues such as whether developing countries would have to adopt GHG emission reduction commitments or whether and how commitments should be focussed on mandatory policies and measures or national emission quotas or budgets. The final stages of the INC and AGBM processes were largely characterised by intense negotiations where key principles agreed earlier were observed (*e.g.*, differentiation, flexibility, equity and an overarching goal such as stabilisation of GHG emissions by 2000 or joint 5% emission reduction goal for industrialised countries by 2008-2012), but where eventually agreed commitments and responsibilities were mainly the result of negotiation dynamics under time pressure rather than based on scientifically derived methodologies.
- The negotiation processes towards the Kyoto Protocol (as well as towards the UNFCCC) could also be characterised by taking **several small steps instead of trying to make a few large steps** towards a final agreement. With small steps countries could familiarise themselves well with positions of other countries and related sensitivities, *e.g.*, how strict are developing countries on non-acceptance of quantified commitments or how does the EU proposal on mandatory policies and measures for climate change policies differ from quantified, national emission quota and to what extent are countries' internal political situations and sensitivities reflected in their negotiation positions? Although progress may not always have been visible and satisfactory during the AGBM process, these small steps were indispensable for making the final step in Kyoto.
- During negotiations under the AGBM process and after 'Kyoto', **countries hardly negotiated as individual Parties**. Instead, they formed negotiation groups or coalitions to jointly formulate and express their views and demands on what benefits they expected from a protocol and what costs they would accept. Logically, country negotiation groups were formed by 'like-minded' countries which had common concerns and interests (*e.g.*, Alliance of Small Island States or Umbrella group). The groups subsequently appointed representatives to smaller negotiation groups such as 'Friends of the Chair' or working groups on specific topics at AGBM, SB or COP sessions. At some stages during the AGBM process, especially the G-77&China sometimes seemed to splinter into smaller developing country groups with different interests on particular topics. However, by the time of 'Kyoto', the G-77&China regained unity and formed an important negotiation partner with strong influence on the eventual negotiation outcome.
- While the Berlin Mandate negotiation process had mainly taken place within the AGBM and COP framework, during 1998-2005 negotiations were increasingly characterised by **(high-level) bilateral meetings between key Parties** (sometimes even in the context of other multilateral meetings such as of the WTO). These diplomatic meetings of country representatives between the

official UNFCCC sessions turned out to be almost as important as the discussions inside the official negotiations room, especially after the withdrawal from the Kyoto Protocol by the USA.

In conclusion, the main benefit from the Kyoto Protocol negotiation process was that **it was sufficiently flexible to enable an ongoing international debate on climate change** by observing the principle of 'common but differentiated responsibilities' so that most countries decided to ratify it. After all, the negotiation process in this chapter has shown that generally there was no disagreement about the requirement to combat global warming; disagreements emerged about the roads to be taken, responsibilities and the AGBM process managed to find a mutually acceptable pathway. In that respect, basic condition 2 was met during Kyoto Protocol negotiations. The condition was also met with respect to the possibility to distinguish political from technical issues, by leaving some negotiation steps to the COP and others to the AGBM and Subsidiary Bodies, so that political issues would not necessarily have to block technical discussions. However, after the US withdrawal from the Kyoto Protocol in 2001, the UNFCCC negotiation process was not able to immediately handle the new situation, so that the Protocol had to be saved with help of bi- and multilateral meetings between key Parties (for entry into force of the protocol) outside the UNFCCC negotiation process. It showed that the negotiations process was sufficiently enabling to work flexibly from hypothetical points A to D in Figure 1-3 when the negotiation environment was relatively stable, but when external 'shocks' emerge, the process needed external support, such as bi- or multilateral meetings of government leaders.

Meeting basic condition 3: Decisive negotiation tactics and facilitating aspects during AGBM protocol negotiations

The Kyoto Protocol design and structure and the progress during the negotiation process were influenced by the following negotiation tactics and facilitating aspects:

- In 1995, the **IPCC** published its Second Assessment Report with the important conclusion that human action could have climatic impacts. This conclusion had a direct impact on climate policy making with the COP-1 decision that the stabilisation targets agreed under the UNFCCC for the year 2000 were inadequate. The IPCC report conclusions thus formed an important input for the Berlin Mandate negotiations.
- The **personalities** of Chair Raul Estrada during the AGBM process and US Vice President Al Gore were important factors for successful completion of the AGBM and COP-3 negotiations. Estrada managed to keep all Parties on board despite their controversies and disagreements and managed to keep the principle of 'common but differentiated responsibilities' alive (important for developing countries) while enabling considerable flexibility to industrialised countries for fulfilling commitments (thereby utilising a broad range of US proposals for the protocol text). Gore's intervention halfway the negotiations at 'Kyoto' was important to mobilise the US position in a direction away from a stabilisation target for the USA with meaningful participation by developing countries (as in the Byrd-Hagel resolution). However, this tactical manoeuvre overlooked that the thus agreed Kyoto Protocol text could not be supported by the US Congress after 'Kyoto', so that US ratification of the text never took place.
- During the AGBM negotiation process and thereafter, at several points in time, **crucial negotiation breakthroughs** were achieved so that negotiation deadlocks could be avoided. For

instance, the US agreement with the legally-binding nature of GHG emission reduction or limitation targets (at AGBM-4) was an important step for continuing protocol design work. It clearly facilitated the flexibility in meeting mitigation targets as desired by the USA (flexibility in terms of geography, timing and GHG basket). At 'Kyoto', broadening the scope of the JI mechanism to developing countries (through the CDM) and allowing international quota trading were important breakthroughs as these enabled industrialised countries to accept quantified emission reduction or limitation commitments.

- Another main breakthrough took place at COP-6*bis* in July 2001 when Parties agreed on a broader application of accounting methods for using carbon sequestration for Kyoto Protocol compliance and on an overall **compliance procedure**, which triggered protocol support by important Annex I Parties such as Japan, Russian Federation and Australia. Finally, a key breakthrough for the entry-into-force of the protocol was the EU agreement in May 2004 with Russian membership of the WTO, which strongly facilitated Russian ratification of the Kyoto Protocol in 2004.
- During the negotiation process, **several negotiation groups played prominent and decisive tactical and facilitating roles:**
  - The Alliance of Small Island States (AOSIS) were prominent during the first stages of the negotiation process by tabling concrete proposals for overall emission reduction targets with clear equity principles. These proposal were particularly important as they were a reflection of the concerns of a group of Parties directly threatened by climatic changes. In terms of ambition levels these proposals could be seen as starting points for negotiations (in terms of Figure 1-3, close to point A).
  - The JUSSCANZ and later Umbrella Group strongly argued in favour of emission reduction commitments for both developed and developing countries, especially those with rapidly growing economies and increasing GHG emissions. This proposal was not agreed in the eventual Kyoto Protocol text, but in return for 'losing' this point, industrialised countries acquired broad flexibility tools to comply with their commitments at relatively low costs and under a relatively weak compliance regime.
  - The G-77&China negotiators managed to keep commitments for developing countries, even voluntary targets, out of the Kyoto Protocol, which they could claim as a success, but which also reduced the chances of ratification of the protocol by key industrialised countries and their compliance with protocol targets later on.
  - The Russian Federation position during protocol negotiations was characterised by 'threats' to support the OPEC Parties position and not to adopt quantified emission targets. Eventually, the Russian Federation was kept on board of the Annex I/Annex B coalition by agreeing that the country would stabilise its GHG emissions at 1990 levels, while the Russia's actual emissions since 1990 had been much lower (giving rise to the debate on 'hot air' as explained in Chapter 5).
  - The EU, finally, faced several difficulties during the AGBM negotiations as its core proposal, mandatory policies and measures for Parties under the protocol, was not supported and eventually withdrawn. After the US withdrawal from the protocol in 2001, however, it was mainly the EU that managed to save the protocol through careful diplomacy.

- At the stage of developing a climate regime during the Kyoto Protocol negotiations, probably the most important aspect was to **obtain a broad international political support for a climate policy framework**, either through quantified commitments or through non-quantifiable measures, such as reporting, awareness building, voluntary action, *etc.*[52] Eventually, the global climate 'community' was sufficiently determined to keep a global climate policy regime alive, when looking at the sudden increase in international diplomacy, both with involvement of industrialised and developing countries, after the US decision to withdraw itself from the Kyoto process and when the Russian Federation hesitated to ratify the protocol.
- The Kyoto Protocol process has also revealed some of the characteristics of the **international relations theories** explained in Chapter 2. The behaviour of the four Umbrella Group countries during July-November 2001 (*i.e*. Australia, Japan, Russia and Canada, after the US withdrawal from the protocol) can be explained from a neo-realist perspective (Dessai & Schipper, 2003), which states that countries look at the distribution of power among the other states and then assess what the prospects are for cooperation and making a deal. Realising that they, as a group, actually had veto power, the four countries did all they could to acquire the negotiation outcomes that they wanted. Nonetheless, also elements from constructivism can be found in the sense that the vast majority of Parties have continuously realised that individual decision-making on climate policy would lead to less beneficial (long-term) outcomes than multilateral cooperation would (Dessai & Schipper, 2003).

With respect to the above observations, it can be concluded that basic condition 3 (tactics) has been met during the Kyoto Protocol negotiations in several ways: emerging scientific knowledge creating a stronger sense of urgency, personalities with decisive value during key negotiation stages, linking Kyoto Protocol negotiations with external negotiation processes such as WTO (EU and Russia), and showing creativity by introducing new concepts and weighing other Parties' responses to that. On the other hand, basic condition 3 may not have been successfully met with a view to tactical manoeuvres by key negotiators (such as by the US delegation at Kyoto in 1997) which resulted in short-term gains (adoption of the Kyoto Protocol at COP-3), but which turned out to be rather unrealistic for domestic acceptance at a later stage, such as by the US Congress.

The above design, negotiation and tactical aspects as basic conditions for the negotiations on the formulation and implementation of the Kyoto Protocol during 1992-2005 are summarised in Table 3-2.

[52] Some authors argued that the Kyoto Protocol should be looked at as a learning-by-doing experiment, to be improved in subsequent protocols (Dessai & Schipper, 2003).

Table 3-2. Summary of design, procedural and tactical aspects of Kyoto Protocol negotiations

	Description of basic condition in negotiation file	Extent to which basic condition was met
1. Design of policy (instrument)	*Scope*: • Global coverage, but with commitments for Annex I Parties only • Both mitigation and adaptation *Principles*: • Common but differentiated responsibilities • Precautionary principle • Cost-effectiveness *Goals*: • Overall GHG reduction target (>5% for Annex I Parties) • Differentiated commitments for individual Annex I Parties *Means*: • Flexibility in terms of timing (5-year commitment period) • Geographical flexibility (JI, CDM) • Multiple GHGs	(+)Key principles of the UNFCCC were considered in protocol (mainly precautionary actions and common but differentiated responsibilities) (–) Uncertainties about Annex I Parties' policy context, implementation and policy interactions remained (–) Compliance system was weak
2. Enabling negotiation process	*Meetings*: • Annual COP sessions • Meetings of AGBM • Bilateral country leader meetings (esp. 2001-2005) *Strategy*: • AGBM enabled small step negotiations • Process started with focus on procedures, followed by detailed content discussions and concluded with high-pressure negotiations *Responsibility*: • COP chairs annually appointed • AGBM chair appointment was longer term • Negotiation topics negotiated in working groups	(+) Sufficiently flexible process to enable an ongoing debate on climate change and policies (+) Distinction between political and technical issues (–) After US withdrawal, UNFCCC negotiation process needed external support from bilateral negotiations outside Convention
3. Decisive tactics and facilitation	• IPCC SAR 1995 – indication of possible human impact on climate systems • UNFCCC secretariat facilitated meetings by preparing negotiation texts in multiple languages • AGBM-Chair Estrada and US Vice-President Gore had important roles towards COP-3 agreement on Kyoto Protocol • Inclusion of JI and CDM on global scale facilitated agreement on Annex I Party commitments • EU recognition of Russia's WTO ambitions supported Kyoto Protocol ratification • US withdrawal from Kyoto Protocol led to weaker compliance regime of protocol.	(+) Stronger sense of urgency, role of personalities, link with external negotiations (WTO), new concepts introduced (+) Inclusion of world-wide GHG emissions trading instruments (+) Facilitative secretariat support (–) US agreement of Kyoto Protocol was not backed by US Congress support

Chapter 4. Negotiations on a Climate Policy Instrument - Joint Implementation

4.1. Introduction

When agreeing under the UNFCCC that industrialised (Annex I) countries shall "adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs" (UNFCCC, 1992a, pp. 12, Art.4.2a), it was also agreed that "these Parties may implement such policies and measures jointly with other Parties" (UNFCCC, 1992a, pp. 12, Art.4.2b). This agreement formed the basis of the concept of 'Joint Implementation' (JI) which created the possibility for Parties to invest in GHG emission reduction measures on the territory of and in cooperation with other countries. The main rationale for JI is that GHGs mix evenly within the atmosphere so that there is no direct link between the location and the impact of GHG emissions or emission reductions (Cubasch, et al., 2013, pp. 123-129).[53] Therefore, the effect of GHG emission reduction actions is independent of their location, which implies that cost reductions can be achieved if these actions take place where costs are relatively low.

As has been shown in Chapter 3, JI was among the negotiation factors which facilitated agreements on the UNFCCC and also later on the Kyoto Protocol. An important reason for that was that inclusion of JI (and the related Clean Development Mechanism, CDM) in the negotiations generated a stronger willingness of industrialised countries to adopt country-specific GHG emission reduction targets. In terms of Figure 1-3, while the UNFCCC and Kyoto Protocol negotiations initially moved from outcome A to outcome B, the cost-effectiveness potential and envisaged sustainable development contribution of JI (and CDM) enabled negotiations to move to outcomes such as C or D. In that sense, JI was an important design element for reaching global consensus on the UNFCCC and Kyoto Protocol. How this has taken place, has been explained in Chapter 3.

Negotiations on JI itself, however, faced similar negotiation dynamics as UNFCCC and Kyoto Protocol negotiations had faced. Also for JI, an ideal negotiation outcome could be envisaged (point A in Figure 1-3) with global collaboration between industrialised and developing countries whereby countries with relatively high GHG emission reduction costs would invest in low-cost countries, so that a similar GHG emission reduction performance could be achieved at lower costs. However, soon after the adoption of the UNFCCC in 1992, it became clear that JI was among its most controversial elements, which resulted in fierce debates at INC meetings during 1992-1995 (see also Chapter 3). At these meetings a controversy among countries arose on whether it was fair to allow industrialised countries, for instance when complying with their UNFCCC year 2000 stabilisation targets, to implement relatively cheap GHG abatement measures on the territory of, *e.g.*, developing countries. Sceptics argued, for instance, that JI would delay investments in sustainable energy systems in

[53] Some have argued that this may not be totally true as the mixing process takes some time. This could result in a situation that for a certain time period the amount of GHG above a certain region remains bigger than above another region (R.J. Heintz & Tol, 1995). In the long run, however, the mixing process of GHG will equalise their concentration throughout the atmosphere.

industrialised countries (Maya, 1995). These arguments resulted in a reduced support by developing countries of the concept JI (corresponding to a move from outcome A to outcome B in Figure 1-3).

It is probably due to careful diplomacy at negotiation sessions and the energetic support of some countries that the JI concept remained 'alive' during this period and eventually became one of the pillars of the Kyoto Protocol of 1997. The debate on JI was fuelled by scientific contributions showing the cost-effectiveness potential, the concerns of environmental NGOs and those of governments who favoured JI or were against the concept (Kuik, et al., 1994) (Jepma, 1995b). Slowly, however, after a difficult start at the first post-UNCED sessions of the Intergovernmental Negotiating Committee (INC), Parties began to listen to each other's arguments. This led to an interesting debate moving from an initially negative attitude towards JI to a further development of the concept. As the JI negotiations thus turned out to have a similar dynamics as the overarching climate policy negotiations on the UNFCCC and Kyoto Protocol, this chapter explores whether and how the three basic conditions for negotiating globally supported GHG emission reduction measures have been met for JI.

4.2. The Theoretical Background of the Concept of Joint Implementation

4.2.1. The cost-effectiveness principle of JI

The cost-effectiveness principle of JI can be illustrated via the following elementary case (Pearce, 1995, p. 19). Figure 4-1 shows a two-country model with countries X and Y. Country X's marginal cost curve is shown in the Figure as curve MCx and country Y's marginal cost curve is reflected by MCy. MCx should be read from left to right and MCy should be read from right to left (both curves have a positive slope). In this example, Annex I Party X has a quantified GHG emission reduction commitment of AZ. Country Y does not have such a commitment because it is a non-Annex I Party and has been exempted from a commitment according to the principle of common but differentiated responsibilities (UNFCCC, 1992a). With help of JI projects, country X could fulfil part of its quantified commitment across its own borders, *i.e.* on the territory of country Y. In return, country X receives a credit from country Y for the emission reduction achieved, which it can use to fulfil its overall abatement effort AZ.

Should country X fulfil its commitment AZ solely through domestic actions, then its total abatement costs would amount to triangle ABZ (the area below curve MCx). If, instead, country X achieved reduction AZ fully through JI projects in country Y, X's total abatement costs would amount to triangle ACZ.

From Figure 4-1 it becomes clear that, in terms of cost-effectiveness, neither a strategy of domestic action only, nor full use of JI is optimal for country X. The optimum policy for X is to achieve reduction AD at home and DZ via JI projects in country Y. After all, domestic reduction beyond AD can only be achieved by country X at marginal abatement costs which are higher than those in country Y; all JI emission reductions beyond DZ have higher marginal costs than domestic investment in X. As a result, total abatement costs for country X amount to the area AEZ and the cost-savings for country X through JI amount to area BEZ.

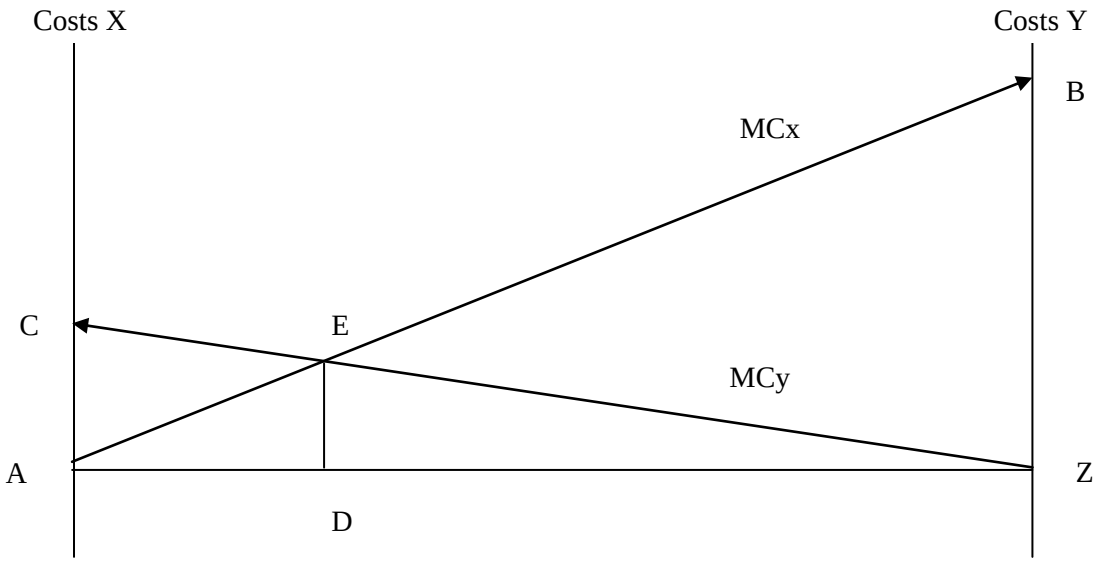


Figure 4-1. Cost-effective GHG abatement with JI

As a concept of international cooperation among countries to reduce abatement costs, JI was not new. Earlier, some forms of JI had been introduced in other international agreements, treaties, and conventions, such as in the Convention Concerning the Protection of Rhine Against Pollution by Chlorides (1976), the UN Economic Commission for Europe (ECE) Convention on Long-Range Transboundary Air Pollution (1979), the Vienna Convention on the Protection of the Ozone Layer (1985), and the Montreal Protocol to the Vienna Convention (1987) (Schrijver, 1995). Each of these conventions enabled Parties to cooperate in order to achieve targets together, with a view to reducing the overall costs. While drafting the UNFCCC, the country delegations were able to consider some lessons learned elsewhere.

However, the cost-effectiveness potential in the context of climate change policies is potentially (much) larger than in the more region-based conventions mentioned above. For example, JI in the ECE Convention on Long-Range Transboundary Air Pollution is complicated by the fact that most of the gases covered by this Convention (*e.g*. sulphur dioxide) do not mix evenly in the atmosphere, but deposit, after their emission, in a region which is relatively near to the source of pollution. This implies, for example, that if Germany agrees with the Czech Republic that part of the pollution caused by emissions in the German Ruhrgebiet would be offset by a German investment in a Czech pollution reduction programme, the regions in the Netherlands, Belgium and Luxembourg adjacent to the Ruhrgebiet would still suffer from the pollution caused there. Eventually, the ECE Convention divided Europe in a number of rectangular areas within which JI is possible; action outside the area must be accompanied by action within the area as well. This, however, has strongly reduced the potential for cost-effective international cooperation under the ECE Convention.[54]

[54] This situation has often been referred to as the SO_2 dilemma: the extent to which JI can be applied is limited due to the regional disposition of the pollutant (Schrijver, 1995).

4.2.2. JI in the IPCC Second Assessment Report

Fairly remote from the political negotiations on a climate Protocol, the IPCC completed its Second Assessment Report (SAR) in December 1995. Part of the SAR was a report by Working Group III (WG III) on "the socio-economic perspectives of climate change in the context of sustainable development" (IPCC, 1995) (JIN, 1995a). In its Chapter 11 (An Economic Assessment of Policy Instruments to Combat Climate Change), WG III identified JI as one of the market-based policy instruments for meeting GHG emission targets and discussed, among others, the following two topics related to the instrument.

First, the 'lead authors' considered JI as a possible first step towards establishing an international tradable quota system for GHGs (IPCC, 1995, pp. WGIII, ch.11). In such a trading system, an Annex I Party with lower GHG emissions than its quota can sell this surplus to a Party that has surpassed its quota. Intuitively, this implies that Annex I Parties with relatively low abatement costs have an incentive to create surpluses within their quota and sell these to Parties with relatively high abatement costs. Parties with relatively high costs, on the other hand, have an incentive to surpass their quota and purchase surpluses from other Parties. As such, an international market emerges where a price is put on GHG emissions.

However, such a quota system assumes that countries with relatively low abatements costs are able to invest in emission reduction measures themselves in order to create a surplus within their quota. In reality, however, such up-front investments may be difficult for countries which suffer domestically from a lack of capital, insufficient investment infrastructure, and a lack of specialised human capital. In other words, what may look like relatively cheap investment options from an international perspective, may, from a purely domestic perspective, turn out to be prohibitively expensive for the potential GHG quota units selling country. Through JI, these problems could be avoided as it envisages a (project-level) cooperation between Parties whereby the buyer of the emission reduction credits could support the upfront project investment and support the mitigation of investment risks in the host country.

However, a second observation of the IPCC 'lead authors' was that it may be difficult to demonstrate that JI investments would not have taken place anyway. According to the IPCC, especially the additionality of low-cost JI projects in developing countries would be uncertain, since "such projects may be close to being profitable and hence may be carried out by the market itself in the near future" (IPCC, 1995, pp. WGIII, ch.11). Moreover, a country hosting a JI project may, have an incentive to exaggerate the emission reductions achieved. The authors point out that the latter problem could be partly solved by establishing a clearinghouse version of JI between Annex I and non-Annex I Parties: "[t]he role of such a clearinghouse would be to screen and aggregate all projects from potential sellers before they are offered as anonymous carbon credits to buyers at a market clearing price" (IPCC, 1995, pp. WGIII, ch.11).

4.3. Concerns about JI Expressed during UNFCCC Negotiations

As has been explained in Chapter 3, the possibility of cooperation among countries on GHG emission reduction measures in order to reduce overall abatement costs was discussed, among others, at the 1989 ministerial climate conferences in Noordwijk, the Netherlands. About two years later, Norway submitted a proposal at INC-3 (Nairobi, September 1991) to establish a clearinghouse which would match cost-effective GHG investment options (JI supply) with industrialised countries' search for such options (JI demand) (Wexler, et al., 1994) (McKinsey and Company, 1989). In general, the participants at INC-3 warmly welcomed the Norwegian proposal (Arts, 1998, p. 139). Industrialised countries supported the proposal as it would enable them to also comply with future GHG emission reduction targets through actions across their borders at relatively low costs. Also developing countries, as potential JI project host countries, initially had a positive attitude towards the Norwegian proposal (Arts, 1998, p. 139). However, the positive reception of the concept at INC-3 and the subsequent inclusion in the final draft of the UNFCCC was no guarantee for an easy implementation of JI once the UNFCCC had entered into force. Environmental NGOs and a growing number of developing countries expressed their objections to JI (Arts, 1998, p. 140).

First, they feared that JI would enable industrialised countries to continue with their relatively carbon-intensive domestic consumption and production patterns. JI sceptics tended to place the discussion on JI within the context of historic GHG emission patterns and concluded that industrialised countries would first have to reduce their GHG emissions domestically, before considering low-cost investments abroad. Otherwise, JI could become a reason for postponing domestic GHG emission reduction measures (Maya, 1995) (Gupta & Kuik, 1995).

A second concern of environmental NGOs and developing countries was related to the initial popularity of carbon sequestration in forests as JI project option (Arts, 1998, p. 140), such as forest conservation (mainly halting deforestation), afforestation (planting trees on a fallow site) and reforestation (planting tree on a deforested area) activities. On the one hand, several countries (*e.g.*, the Latin and Central American countries) recognised that the value of the carbon credits from forestry JI projects could offer an incentive for protecting forest areas which might otherwise be threatened by logging (for instance if the area on which trees grow becomes more valuable than the trees themselves). However, other developing countries, thereby supported by environmental NGOs (Hare & Stevens, 1995), argued that the relatively long lifetime of forestry projects, *e.g.*, 50 or 100 years,[55] would imply that a JI forestry project would occupy a certain area in the host country for a long time, thereby reducing or even removing host countries' flexibility to use the area for other purposes. It could also lead to replacement of deforestation activities to other areas that are not covered by the JI project so that in fact no net carbon sequestration takes place (this effect is often referred to as carbon leakage).

A third issue raised during the INC negotiations on JI was related to the accounting of GHG emission reductions achieved by a JI project. For that it is needed to measure the actual emissions under the project scenario and compare these with the emissions in a reference (or baseline) scenario.

[55] For example, some of the projects implemented under the programme of the Dutch foundation FACE (forests absorbing carbon dioxide emissions) have a contractual lifetime of 99 years with 3 or 4 rotation periods of 25 or 30 years (Stuart & Moura Costa, 1998).

Determining a baseline could be problematic as it describes a scenario that is replaced by the project and therefore counterfactual. A baseline can therefore at best be based on a set of assumptions about the future development of project-related variables, such as: the host country's economic growth perspective, demographic development, relevant government policies, *etc*. Given the uncertainties that surround the estimation of such variables, there may be a risk that JI partners deliberately estimate baseline emissions at too high levels in order to claim more GHG emission reduction credits from JI projects (PROBASE, 2003). This could reduce the environmental integrity of JI as the claimed emission reductions are not realised in reality, while they are still sold to a foreign JI investor as real emission reductions to be used as a compensation for domestic GHG emissions. Chapter 6 further elaborates on this issue, especially with a view to how negotiations have dealt with JI's (and the CDM's) environmental integrity while trying to keep the mechanism workable on a large scale.

A fourth concern expressed during INC negotiations was related to the possible relationship between JI funding and industrialised countries' contribution to Official Development Assistance (ODA). Since the early 1970s, OECD countries have been committed to ODA transfers to developing countries.[56] In addition, as Annex II Parties under the UNFCCC they have a commitment to enable financial transfers to countries with economies in transition and developing countries under the Global Environment Facility (GEF). During the INC negotiations, developing countries argued that JI projects should not be financed from ODA and GEF funds, as this would lead to GHG credit transfers to industrialised countries for financial transfers which they had to carry out anyway. When COP-1 in 1995 decided on the pilot phase for JI, it was explicitly mentioned that JI project should not be financed with funding reserved for ODA and GEF purposes (Earth Negotiations Bulletin, 1995b, p. 5).

Finally, there was a concern that JI projects could lead to a process of 'skimming' in the host countries, *i.e.* investors pick the cheapest abatement options ('low hanging fruits') first (Lee, et al., 1997, pp. 19-25) so that by the time developing countries would need to undertake emission reductions by themselves, only the more expensive options would remain. Although this argument received much attention in several academic studies (Gupta & Kuik, 1995) (Lee, et al., 1997), it was not been widely supported as it tended to overlook JI's potential for deployment and diffusion of technologies and resulting innovation support in JI host countries. Nonetheless, the concern addressed the issue that technologies transferred to a host country should not only be beneficial for the investor countries in terms of realising GHG emission reductions but also be beneficial for host countries with a view to meeting their domestic economic, environmental and social needs. Therefore, developing countries managed to keep this issue within the negotiations where it formed the basis for the condition in the CDM definition (in Kyoto Protocol Art. 12) that a GHG abatement project should in the first place contribute to achieving sustainable development in the host country (UNFCCC, 1998).

With these concerns in mind, JI became a controversial issue at the INC sessions between 1992 and 1995, which is discussed in the next sections.

[56] The OECD countries referred to here are those that were OECD member in 1971 when the agreement on ODA was reached.

4.4. Towards a JI Pilot Phase - 'Rio' to 'Berlin' (1993 - 1995)

4.4.1. Introduction

Among the first tasks of COP-1 (Berlin, March-April 1995) was to take decisions regarding criteria for JI to be reviewed by the COP by 31 December 1998 at the latest (UNFCCC, 1992a, pp. 11, Art.4.2(d)). Preparatory discussions for COP-1 took place under the INC, which met six times between UNCED and COP-1 under the Chairmanship of Mr Raúl Estrada-Oyuela from Argentina.

At the INC sessions, it soon became clear that several passages in the UNFCCC had been ambiguously formulated and therefore left room for different interpretations. The passage defining JI was an example of such ambiguity. According to UNFCCC Article 4.2a, Annex I Parties could implement their commitments (*e.g.*, the quantitative objective for Annex I Parties to stabilise their GHG emissions by the year 2000 at the levels of 1990) jointly with other Parties (UNFCCC, 1992a). However, developing countries immediately opposed the idea of Annex I Parties fulfilling their stabilisation objective under the UNFCCC through JI. Among industrialised countries there was no consensus about this issue, either. The USA was in favour of using JI already for the UNFCCC stabilisation target in 2000 (whether it was called an objective or a commitment), whereas the EU preferred to wait until the mechanism had been completely developed (including properly addressing the concerns mentioned in Section 4.3) and to use JI only for GHG abatement efforts that would go beyond the UNFCCC stabilisation target.

An important issue at INC meetings was the role of developing countries in JI cooperation. In the view of several developing countries, UNFCCC Article 4.2b only referred to cooperation among Annex I Parties as only these countries had a quantitative target under the Convention (UNFCCC, 1992a). During the negotiations, Parties subsequently considered possible interpretations of the scope of the Article. According to a narrow interpretation, Annex I Parties could partly achieve their quantitative targets on the territory of another Party. A wider interpretation of the Article would also provide scope for cooperation on any type of joint action to meet the overall UNFCCC objective, *e.g.*, through technology and financial transfers (Arts, et al., 1994).

At INC sessions, the wider interpretation did not receive much support, but focussing on the narrow interpretation still left unanswered the question of which countries could host JI projects, only Annex I or also non-Annex I Parties? From a purely legal perspective, UNFCCC Article 4.2b did not exclude the possibility of developing country Parties acting as host countries of JI projects. After all, the Article stated that Annex I Parties may implement policies and measures "jointly with other Parties," so that legally speaking there was no reason why developing countries could not be eligible as JI host countries.

The political perspective of this interpretation issue, however, was different. At INC-8 (in August 1993, see below), many negotiators felt that JI could not, or at least not for the time being (*i.e.* before 2000), include cooperation between industrialised and developing countries with the objective to support industrialised countries in achieving their commitments. In addition to this higher level political argument, developing country negotiators emphasised that JI was not ready yet for use as an operational instrument under the UNFCCC as several issues had not been resolved yet. Examples of such issues were the accounting of GHG emission reductions and eligibility of project types. For instance, several Parties at INC sessions argued that sink enhancement projects, such as forestry investments, would have to be

excluded from JI because of the relatively high uncertainties associated with measuring the carbon sequestration, the risk of leakage, and the opportunity costs that may occur for the host country because of the relatively long lifetime of forestry projects. Regarding the sinks issue, there certainly was no unanimity among developing countries, because some of them, *e.g.*, Costa Rica, Ecuador, and Belize, had already become involved in forestry projects with the Netherlands and the USA (INC, 1993).

Below, the exchange of views at the INC negotiation between August 1993 (INC-8) and February 1995 (INC-9) is described.

4.4.2. INC-8

At INC-8 (Geneva, Switzerland, 16-27 August 1993), the discussions on JI were based on statements delivered by 59 Parties, including Colombia, speaking on behalf of the G-77&China, and Belgium speaking on behalf of the EU (INC, 1993). In their statements, developing countries generally took a negative position on JI. The G-77&China, supported by Nauru on behalf of the Alliance of Small Island States (AOSIS), expressed the above-mentioned position that JI only applied to cooperation among Annex I Parties. Malaysia added that JI with developing countries could only be considered an eligible instrument once industrialised countries would have fully met their stabilisation obligations under the UNFCCC through national measures. In addition, Nauru argued that JI should not create an incentive for industrialised countries to postpone the development of appropriate technological innovation (Kuik, et al., 1994, p. 191).

The EU supported many of the points raised by developing countries. While recognising the potential of JI to reduce global GHG emissions in a cost-effective manner, the EU stated that JI "also entails the risk of development in the wrong direction" (INC, 1993). The EU also took the official position that industrialised countries should not use JI for achieving their stabilisation objective under the UNFCCC: "in order to fulfil the specific commitments of Annex I Parties (contained in Article 4.2b) . . . countries must limit their greenhouse gas emissions at home through their own actions and should not use other countries to do the work for them" (INC, 1993). In addition, the EU argued that "Parties should implement a significant and specified share of any future commitments through measures taken on their own territories" (INC, 1993). The latter statement later became an official EU position during the negotiations on modalities and procedures for the Kyoto Protocol between 1998 and 2005 (see the discussion in Chapter 5 on supplementarity).

In its intervention in Working Group I of INC-8,[57] the Netherlands' delegation pointed at the importance of gaining practical, hands-on experience with JI. The lack of such experience had made "the debate about the role of joint implementation and the criteria that should be developed to ensure a proper application a somewhat theoretical exercise" (Netherlands, 1993). In the same Working Group, the EU supported the idea of testing the JI concept during a pilot phase after which the final JI criteria could be decided upon along the lines of UNFCCC Article 4.2d. The Dutch intervention was partly based on pilot projects with JI resemblance that the Netherlands had already developed during 1992-1993. The Dutch Electricity Generating Board (SEP) had agreed with the Netherlands Government to offset the GHG emissions of a 600 MW power plant through the planting of trees both in the Netherlands and abroad (Stuart & Moura Costa, 1998). In addition, the Dutch delegation at INC-8

[57] At INC-8 this Working Group dealt with, among other topics, JI.

underlined the importance of having an extensive dialogue on JI and announced that it would publish a book on JI and organise an international JI conference (see Box 4-1) (Netherlands, 1993).

Box 4-1. The Groningen International Conference on Joint Implementation

From several publications on JI since 1993 it became clear that if JI were to become a successful tool under the UNFCCC and future climate protocols it was necessary to establish a regular exchange of views between stakeholders at the project level and international policy makers.[58] In this pre-Internet era, one of the first attempts to create a platform where business representatives, government officials, academics and environmental NGOs could meet and exchange thoughts and experiences was the 'International Conference on Joint Implementation' held in Groningen, the Netherlands, on 1-3 June 1994 (Jepma, 1995a). The Conference was an initiative of the Netherlands Government[59] and hosted 163 participants of which 90 persons where from Central and Eastern European and developing countries. Next to scientific contributions, updates on the political development of the JI concept, and presentations of national JI programmes (*e.g*., the newly launched US Initiative on Joint Implementation, USIJI), the conference provided specific examples of GHG offset projects, such as a sink enhancement project in Paraguay implemented by the US utility company AES, the ILUMEX compact fluorescent light bulbs project in Mexico, carried out under auspices of the World Bank, and the Decin-Bynov co-generation project in the Czech Republic.

At the meeting, it became clear that several policy makers in both developed and developing countries seemed to be rather unaware of the experiences with actual projects. At the same time, for the business community the INC negotiations seemed fairly remote from their own interests. For example, by the time of the Groningen conference the INC negotiations were moving into the direction of a compromise on a JI pilot phase without crediting of the emission reductions achieved. This compromise was strongly criticised by business community representatives, especially by those companies who had already become engaged in GHG offset projects and felt that their project experience was insufficiently taken into consideration during the negotiations. Eventually, the participants agreed on the 'Groningen Statement on Joint Implementation' which underscored: the role of JI as a complement for domestic action in industrialised countries, the need for clear and verifiable JI project criteria (including the accounting of emission reductions), and the importance of gaining further experience with JI through international cooperation on GHG emission reduction and carbon sequestration.

The Dutch delegation at INC-8 supported the G77 & China position that industrialised country stabilisation targets for the year 2000 should not be met through JI (in line with the EU position). However, the Netherlands also argued that this would not exclude JI cooperation with non-Annex I

[58] Examples of studies carried out during 1993-1995 are: an in-depth Dutch study on legal, institutional and economic aspects of JI (Kuik, et al., 1994); studies on JI from the perspective of developing countries (Parikh, 1993) (Karimanzira, 1994); an OECD analysis on JI with a particular focus on its cost-effectiveness and benefits and risks (Jones, 1993).

[59] The Groningen Conference was organised by the Dutch foundation for International Development Economics (IDE, related to the University of Groningen) and sponsored by the Netherlands' Ministry for Housing, Spatial Planning, and the Environment, the Netherlands´ Ministry for Economic Affairs and the Netherlands' Ministry for Foreign Affairs (Jepma, 1995a).

Parties for actions carried out on top of the stabilisation targets. In its intervention, the Netherlands unilaterally offered a further five per cent reduction below its 1990 GHG emission level by the year 2000 of which two percentage-points were to be achieved through JI projects. To account for these emission reductions, a bookkeeping system with separate accounts for domestic and international (*i.e.* JI) reductions would be needed.[60]

4.4.3. INC-9

By the time of INC-9 (Geneva, 7-18 February 1994), the political lines of estrangement among (groups of) industrialised country Parties on the one hand, and between industrialised countries and developing countries on the other hand, had become sharper as far as the discussion on JI was concerned. This was largely the result of the launching of the Climate Change Action Plan by the Clinton Administration in the USA in October 1993 (Graham, 1995). Although the Plan had announced that the USA in principle aimed at achieving its stabilisation target via domestic abatement action, the Plan did not explicitly exclude the use of JI in this context. On the contrary, the US Government emphasised that an enormous potential existed for cost-effective GHG abatement measures to be taken abroad in cooperation with other countries. In order to support the development of the JI concept, the Climate Change Action Plan introduced the US Initiative on Joint Implementation (USIJI), which was the first full-blown JI pilot programme in the world (Graham, 1995).

The fact that the USA had announced that it would *in principle* meet the UNFCCC target via domestic action invited the EU to present a somewhat sharper position than it had done at INC-8. Although, due to the EU system of rotating Chairs, the INC-9 position paper had been prepared under the responsibility of a different Chair (*i.e.* Greece), the change in the tone of the statement was largely induced by the EU Council of Environment Ministers, of which the composition had hardly changed.

Contrary to the EU statement at INC-8, which had begun with recognising the cost-effectiveness potential of JI, the EU INC-9 statement stated in paragraph 2 that JI is "a complex issue with far-reaching political implications" (Greece on behalf of EU, 1994). In paragraph 3 (out of 6), the EU repeated its earlier position that Annex I Parties "must limit their greenhouse gas emissions at home through their own actions and that this commitment should not be met by joint implementation projects" (Greece on behalf of EU, 1994). The EU argued that for JI to become a useful instrument under the UNFCCC, it was necessary to build confidence amongst all Parties first. In this process, crediting of GHG emission reductions achieved by JI projects would, for the time being, not be eligible as this "would be very damaging for the credibility of Annex I Parties." As a result, the EU wanted to "refrain from talking about crediting of joint implementation towards the current [1990-2000] commitments" as a too strong focus on crediting JI in the short term would "harm the potential long-term benefits of joint implementation" (Greece on behalf of EU, 1994, p. para.4).

At INC-9, the idea of a JI pilot phase was further discussed. On 10 February 1994, the Netherlands delegation elaborated on a proposal of a phased approach for JI development. According to this

[60] The Dutch delegation suggested that such a separate accounting system could later evolve into a dual commitment approach with a view to quantitative commitments beyond the UNFCCC stabilisation target for the year 2000 (Netherlands, 1993).

approach, Parties could first start with a JI pilot phase (without crediting emission reductions against UNFCCC stabilisation targets), which could, after three years of the pilot phase experience and a further exchange of views during negotiations, be followed by a consecutive phase with 'more elaborate criteria' (Netherlands, 1994). For the pilot phase, general and flexible criteria would be sufficient, which could be extended with more detailed criteria based on the pilot project experiences (Metz, 1994). The Dutch INC-9 intervention carefully avoided the issue of whether crediting of emission reductions would be allowed in the second phase. At most it said that a "phased approach implies that issues such as 'crediting' against commitments under the Climate Convention, are dealt with and agreed upon at a later stage" (Metz, 1994) (Netherlands, 1994).

Box 4-2. Catalyzing a Market for Joint Implementation Projects

At INC-9, the Business Council for Sustainable Development (BCSD, presently World BCSD) presented a study project 'Catalyzing a Market for Joint Implementation Projects', prepared by a network of senior business executives and government officials to coordinate international action on JI (Verdugo & Leslie, 1994). At a BCSD meeting in Miami (USA, early 1994) business representatives had expressed their concern that INC negotiations had still not resulted in modalities for implementing JI projects, including rules for credit sharing, whereas at the same time several BCSD members had already expressed their interest in JI demonstration projects. Therefore, BCSD recommended that the INC develop a framework for such demonstration projects, including guidance to potential JI investors. Furthermore, the Miami meeting stated that the business community would only invest in JI pilot activities if it had sufficient guarantee that a pilot phase would be followed by a full-blown JI regime.

'Catalyzing a Market for Joint Implementation Projects' was presented at INC-9 by Jim Leslie, Senior Vice-President of Corporate Services at TransAlta Utilities in Canada, and Sergio Verdugo, Planning Manager of CAP S.A. in Chile (Verdugo & Leslie, 1994). In 1992 and 1993, TransAlta, being a medium-sized electric utility generating 95 percent of its electricity by coal and one of the largest sources of CO_2 emissions in Canada, began developing activities to reduce GHG emissions: CO_2 emission reduction from its own operations; pursuing energy efficiency improvements with its own customers by enhancing demand-side management programmes and investments; and making an inventory of the opportunities to reduce the effects of the company's emissions via offsets, *e.g.*, via measures carried out abroad. TransAlta realised that it would need JI-type of actions for meeting possible future GHG abatement commitments.

However, as the report explained, an internal TransAlta advisory process showed that its customers preferred that the company spent capital locally in order to create local jobs. TransAlta's stakeholders were also concerned that the uncertainties surrounding GHG would offset projects outside the own area of Western Canada. In order to help addressing these uncertainties, TransAlta decided to play an active part in the JI study project of the BCSD and to set up a JI demonstration project together with the Chilean company CAP S.A. in Santiago de Chile. Through this project both companies, as well as their stakeholders, could learn what a real JI project would look like. The TransAlta-CAP pilot became a key element of the BCSD report.

The EU and Dutch statements turned out to be a reflection of the general feeling at INC-9 amongst the delegates that a testing period would enable Parties to better assess JI's potential benefits and risks, and that during the pilot phase GHG emission reduction credits should not accrue to JI investor countries. As Box 4-2 shows, also the business community could support a phased approach, on condition of a guarantee that a pilot phase would be followed by a full-blown JI regime. The reserved attitude at INC towards JI in general, and JI crediting in particular, in combination with INC's slow progress with formulating general JI criteria, made the idea of a pilot phase without crediting the main input into the negotiations at INC-10 and 11. In its conclusion on JI, INC-9 requested the interim secretariat of the UNFCCC[61] to develop further documentation on JI, which should include options for a phased approach beginning with a JI pilot phase. The documentation should address objectives and list possible criteria for a pilot phase and institutional arrangements so that an outline of the main elements of a pilot phase could be prepared by INC-10 and 11 to be adopted by COP-1.

4.4.4. Preparing for COP-1: INC-10 and 11

INC-10 (Geneva, 22 August - 2 September 1994) (INC, 1994) and INC-11 (New York, 6 - 17 February 1995) (INC, 1995b) further elaborated on the JI pilot phase based on a note by the interim secretariat of the UNFCCC (UNFCCC, 1994) which described that the purpose of the JI pilot phase was to:

- test the JI concept,
- develop a better understanding of complex issues,
- develop a broad basis of experience, and
- address the political implications of JI in a step-by-step manner.

In the note, the secretariat put forward the consideration that, assuming no crediting would take place during a pilot phase, all Parties, including non-Annex I Parties, would be eligible to participate in JI activities. As such, the secretariat reduced the negotiating scope for developing countries. Since the assumption of a pilot phase without crediting removed an important concern of developing countries, it became more difficult for them to oppose voluntary participation of non-Annex I Parties in the pilot phase. Consequently, for several developing countries the participation of non-Annex I Parties on a strictly voluntary 'opt-in' basis had become acceptable, at least for the pilot phase.

In the draft COP-1 decision prepared at INC-11, JI pilot phase projects were for the first time referred to as "joint action to implement policies and measures which in no way modifies the commitment of each Party" (INC, 1995c). Another term used in New York was 'joint implementation activities'. Both terms were a reflection of the attempts to make explicitly clear that the pilot phase would be different from a JI regime with crediting of emission reductions.

In general, at the eve of COP-1 (*i.e.* early 1995) the positions on introducing JI were as follows. Some countries, *e.g.*, the USA, were in favour of an immediate introduction of a full-blown JI system with crediting (Earth Negotiations Bulletin, 1995a). Other Parties, such as the EU, supported a pilot phase without the possibility of crediting JI emission reductions towards Annex I Parties' objectives under the UNFCCC for the year 2000 (Article 4.2). Finally, the majority of the non-Annex I Parties

[61] Between UNCED and COP-1, the UNFCCC secretariat officially had the status of an interim secretariat, see also Chapter 3.

considered a full-blown JI system with crediting of GHG emission reductions before 2000 unacceptable. The main difference between the latter two positions was that, unlike the EU, many developing countries did not want to already express their support for a JI-with-crediting scheme for commitments after the year 2000. The G-77&China repeatedly argued that they wanted the Annex I Parties to first fulfil their GHG stabilisation targets for 2000 and enable financial and technology transfers to developing countries (Article 4.4). They therefore preferred avoiding the term 'Joint Implementation' and to focus on 'Joint activities' instead.

Nevertheless, Parties reached consensus at INC-11 that JI could be taken further as an element of negotiations on quantitative commitments for Annex I Parties for the period after the year 2000, should COP-1 decide on such negotiations based on a review of the adequacy of commitments (see Chapter 3) (Earth Negotiations Bulletin, 1995a). Eventually, there was consensus at INC that crediting of JI emission reductions would not be allowed for pre-2000 objectives and that allowing future crediting would to a certain extent depend on the results of a JI pilot phase.

Shortly before COP-1, it could be concluded that during the INC negotiations on JI between 1992 and 1995 industrialised countries had failed to clearly demonstrate the benefits of JI for all Parties involved. Basically, JI has a triple-win potential with the possibility to bring different policy priorities of Parties together. First, by reducing GHG emissions (and often, as a side effect, also emissions of other pollutants) JI contributes to preventing global climate change. Second, the investor country in the Annex I region can fulfil its commitments at lower costs, and, third, the host country (for instance, a developing country) benefits through the additional transfer of modern technologies and finance accruing from the project. Initially, when JI was proposed by the Norwegian delegation for introduction in the UNFCCC text at INC-3, developing countries appreciated this win-win-win potential (see above).

However, at INC sessions, developing countries managed to move the negotiation focus towards the potential risks of JI thereby openly questioning whether a JI-like concept were acceptable at all under the UNFCCC, for the period up until 2000 and beyond. Several industrialised countries (*e.g.*, EU) supported developing countries in this discussion, although the UNFCCC had already explicitly recognised JI as an eligible instrument to assist Annex I Parties in achieving their commitments. One could argue that industrialised countries allowed JI discussions at INC to move into a political debate on an issue that had already been resolved before UNCED (*i.e.* whether or not JI). Consequently, there was insufficient focus on the real, more technical accounting and equity issues related to JI (*e.g.*, baselines, leakage, credit sharing). As a result, JI was indeed not ready yet as a full-blown instrument. Regarding JI, COP-1 faced the task to bring the focus of discussion back on the technical issues.

Yet, with developing countries' fairly negative general attitude towards JI and a consensus on a fragile proposal for a phased approach for JI, which divided the group of industrialised countries, Parties left for Berlin.

4.4.5. Activities Implemented Jointly Pilot Phase agreed at COP-1

As Parties had agreed at INC-11, JI was one of the policy measures to be included in negotiations on a protocol or other legal instrument. Starting from the consensus reached a month earlier in New York to further elaborate on a pilot phase for JI without GHG crediting (see also Chapter 3), a long

discussion took place about the nature and name of the JI pilot phase. The G-77&China repeated its point of view that a pilot phase would not imply that after its conclusion an official JI regime with crediting of GHG emission reductions would automatically enter into force. Therefore, they expressed their concern regarding the use of the term *Joint Implementation* in the name of the pilot phase. As a compromise, COP-1 decided to establish a pilot phase for Activities Implemented Jointly (AIJ) among Annex I Parties and, on a voluntary basis, with non-Annex I Parties (Earth Negotiations Bulletin, 1995b, p. 9) (UNFCCC, 1995b). During this pilot phase, planned to last until the end of 2000, industrialised country Parties could establish AIJ pilot projects in order to gain experience with several technical and accounting issues, which needed to be resolved, *e.g.*, baseline determination, infrastructure needs to carry out projects, monitoring, verification of the emission reductions achieved, *etc*.

For non-Annex I Parties the AIJ pilot phase was sufficiently in line with their positions taken before COP-1 and also the EU had argued in favour of a pilot phase. The change in name (from JI to AIJ) and the changed focus on joint activities were not real obstacles for the EU. After all, whether JI was to be allowed as a policy instrument for future commitments was expected to be a decision to be taken during the negotiations on a protocol or other legal instrument. Therefore, not including the term JI in the COP-1 decision did not imply that the option of project-based emissions trading had been removed from the negotiation table and the UNFCCC process. The US Government was disappointed about the decision to establish a pilot phase without crediting, but announced that it would continue its USIJI programme for which the first projects had been approved in February 1995, shortly before COP-1 (JIN, 1995b).

COP-1 decided on the following criteria for AIJ pilot projects (UNFCCC, 1995c, pp. 18-20):

1. AIJ should be compatible with and supportive of national and development priorities.
2. AIJ activities have to be accepted, approved or endorsed beforehand by the Parties' governments.
3. The environmental benefits to be expected should be additional, *i.e.* the reduced emission should stay below an *ex ante* determined project baseline.
4. The financing of the activities should be additional to current GEF and ODA funding.
5. No credits should accrue to any Party from AIJ during the pilot phase.

The first criterion dealt with the concern raised by developing countries that AIJ investor countries, or private sector entities acting on their behalf, may be mainly focussed on the GHG emission benefits of a project, rather than consider the development priorities of host countries. It was argued that AIJ could only contribute significantly to sustainable development if the project would be in line with national priorities in the host country. The second criterion defined that a project can only be considered an AIJ investment if the governments of both the host country and the investor country have agreed, approved and endorsed the project as such.

Criteria 3 and 4 dealt with the issue of additionality of GHG emission reductions beyond business-as-usual actions. Criterion 3 stated that an AIJ project should reduce GHG emissions below a pre-determined reference scenario (the baseline). Criterion 4 emphasised that funding to be made available for AIJ programmes and projects should not be taken from GEF funding and ODA flows. In general, criteria 3 and 4 formalised that an activity already planned under, *e.g.*, domestic legislation in the host country or under GEF or ODA could not be considered additional, and would thus not qualify for AIJ recognition.

The background of the fifth criterion – no crediting during the AIJ pilot phase – has been discussed above. However, this decision could lead to a chicken-and-egg dilemma. On the one hand, an important argument for not allowing AIJ crediting had been the lack of experience with several technical issues. On the other hand, however, precisely the lack of crediting during the AIJ pilot phase turned out to be a serious obstacle for project developers to implement AIJ projects. The AIJ potential was, therefore, only sparingly utilised and, thus, relatively little experience was gained.

Finally, COP-1 requested the UNFCCC Secretariat to compile synthesis reports on AIJ progress during the pilot phase for consideration by the COP: "on this basis, the COP shall, at its annual session, review the progress of the pilot phase with a view to taking appropriate decisions on its continuation" (UNFCCC, 1995c, pp. 18-20).

4.5. Continuing JI Negotiations during 1995-1997: from 'Berlin' to 'Kyoto'

4.5.1. Initiating Learning from AIJ Experience

The first negotiations after COP-1 took place in Geneva (28 August – 1 September 1995) where sessions were held of the SBSTA and SBI and the AGBM (see Chapter 3). AIJ was discussed at SBSTA sessions with a strong focus on additionality of GHG emission reductions and baselines to help determine that. For better comparison and evaluation of experiences gained with these technical issues, SBSTA decided to develop a uniform format for reporting on AIJ projects "taking into consideration views expressed by Parties and experience gained in AIJ for consideration at its future sessions, in coordination with the SBI, in order to allow COP at its next annual session to review the progress of the pilot phase, in implementation of COP decision 5/CP.1" (Earth Negotiations Bulletin, 1995d, p. 5) (SBSTA, 1995) (JIN, 1995c).

An important aspect of SBSTA-2 discussions (Geneva, 27 February - 4 March 1996) was to establish a framework for learning from AIJ experience. For that, an initial framework for reporting on AIJ was adopted (see Box 4-3 for further details). In addition to the discussions on the initial framework for reporting, several delegates at SBSTA-2 argued that the time had come to start discussions on a mutual crediting system for (some of the) AIJ/JI projects (Earth Negotiations Bulletin, 1996c, p. 7) (JIN, 1995d). With JI being discussed as a policy instrument in the AGBM process (see Chapter 3) and given that only one COP would be held before Parties would have to agree on a Protocol at COP-3, it was considered important to reach agreement on a crediting regime for JI projects to be included in the Protocol.

Box 4-3. Initial framework for reporting on AIJ

According to the Initial Framework for Reporting on AIJ, each national government of Parties involved in AIJ should report to the COP on a project-by-project basis unless Parties agreed on a common report (JIN, 1995d). These reports were for information purposes only but the following information was required:

- A project description, including: type of project, actors involved, institutional arrangements, actual costs to the extent possible, technical data, mutually agreed project assessment procedures, long-term viability of the project, *etc.*
- Governmental acceptance, approval or endorsement.
- The project's compatibility with and supportiveness of national economic development and socio-economic and environmental priorities and strategies.
- The benefits that can be derived from the project.
- A calculation of the project's 'baseline'.
- The additionality to the financial obligations of Annex II Parties under the finance mechanism of the UNFCCC[62] as well as to current ODA flows.
- The extent to which the project contributes to capacity building, transfer of environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the UNFCCC.

Next to the negotiation process after COP-1, high-level discussions on JI and AIJ also took place at meetings, such as the Ministerial Conference organised by the UN Economic Commission for Europe (ECE) in Sofia (Bulgaria, 23-25 October 1995) (JIN, 1995e). Although this conference was not part of the UNFCCC negotiation cycle, it was considered as highly relevant for the political process of designing a broad European climate change policy framework including measures such as JI.

The Ministerial Declaration of the Sofia Conference contained a passage on AIJ in which the Ministers "note the recent initiatives to establish pilot projects for activities implemented jointly as a cost-effective means for private investments to reduce greenhouse gas emissions on a bilateral basis" (JIN, 1995e). The Ministers recommended that AIJ pilot projects be further developed in the near future and that national experiences be reported to the UNFCCC Secretariat. In addition, AIJ was also included in the ECE's 'Integrated Report on Financing' presented and discussed at the Sofia Conference (JIN, 1995e). This report described potential techniques to facilitate the financing of emissions reduction policies and measures. Among the techniques described were, for example, debt-for-nature swaps and green investment schemes with fiscal incentives.

For the identification of potential AIJ pilot projects the European Environment Ministers proposed using the Project Preparation Committee (PPC)[63] to match project budgets and loans for environmental projects in Central and Eastern Europe. The Ministers endorsed that the PPC "should strengthen its

[62] *i.e.* the Global Environment Facility (GEF).

[63] PPC was established in 1993 by the Second Ministerial Conference "Environment for Europe", Lucerne, with representatives from bilateral donors and multilateral financial institutions such as the World Bank and the European Bank for Reconstruction and Development (EBRD). Its focus was on environmental investments and improvement of coordination between international financial institutions and donors wanting to invest in environmental protection in the region. The PPC was established at the EBRD (EBRD, 2007).

cooperation with [Central and Eastern European] countries and, in conjunction with NEAPs [National Environmental Action Programmes], identify, prepare and develop economically viable environmental projects" (JIN, 1995e).

Box 4-4. Regional Conference on Joint Implementation

On 17-19 April 1996, initiated by the Netherlands Government and the Dutch Joint Implementation Network (JIN), a regional conference on JI was organised by the Czech energy efficiency centre SEVEn in Prague, the Czech Republic (Tichy, 1996). The conference, which hosted over 100 participants, focused mainly on actual JI pilot projects (or projects similar to JI) that had been implemented in Central and Eastern Europe. For this purpose a report, 'Joint Implementation Projects in Central & Eastern Europe', had been prepared describing 31 pilot projects (Center for Clean Air Policy, 1996).

At the conference, which was one of the first non-UNFCCC meetings since COP-1 dealing with JI and AIJ, participants expressed concern that although several potential AIJ pilot projects had been identified in Central and Eastern Europe since April 1995, only a few of them had been able to find full funding. The main reason for investors' hesitation to fund AIJ projects had been the absence of crediting. According to the additionality criterion of COP-1, only those projects would qualify as AIJ that would not have been implemented otherwise, *e.g.*, for commercial reasons. Several identified potential AIJ projects were lacking some 10 to 15% of the investment capital so that their internal rate of return was too low. In principle, the revenues from the GHG emission reduction credits could have covered the lacking funding, but the COP had excluded this crediting option from AIJ so that GHG emission reductions could not be valued as part of the project revenues. As a consequence, the private sector was generally not interested in investing in AIJ and the funding had, therefore, to come from the investor country governments. This strongly reduced the amount of funding available for AIJ projects. The USIJI programme was an illustrating example of this situation. Although USIJI had already identified and approved a number of AIJ projects, the US private sector did not want to invest in these activities due to uncertainties about the eventual revenues from project. Several USIJI projects had thus difficulties in developing from approved AIJ activities on paper to actual GHG abatement action.

The participants at the Prague conference recommended that the SB sessions and the upcoming COP-2 should advance the role of JI by providing clarity about the possibility for Annex I Parties to use JI for future commitments. It was felt that, for the time being, the most feasible system would be JI among those Parties that would agree on quantitative commitments under a Protocol (likely to be the group of Annex I Parties, see Chapter 3). Trying to propose a global JI system with the participation of developing countries could frustrate the Protocol negotiations and could even lead to an extension of the AIJ phase beyond the year 2000, still without crediting. Several Annex I Parties present in Prague made clear that the latter would be unacceptable for them. Although the Prague conference was not an official UNFCCC meeting, its discussions and conclusions indicated the lines along which the Protocol negotiations were taking place up to COP-3.

In Sofia, the Netherlands Minister for the Environment, Ms De Boer, announced that her Government had decided to reserve funding for the (co-)financing of AIJ projects in Central and Eastern Europe

and in developing countries (JIN, 1995e). In addition, the Netherlands announced two regional conferences on AIJ, one in the Czech Republic on AIJ in Central and Eastern Europe and one in India on AIJ in developing countries. These two meetings were a follow-up to the International Conference on JI (Groningen, 1-3 June 1994) and had the objective to bring the experiences of project stakeholders and policy makers together (see Box 4-4). Also the Governments of Germany and Austria expressed their positive attitude towards AIJ and their willingness to support the further development of the concept during the pilot phase.

4.5.2. Making progress with AIJ

During COP-2 (Geneva, Switzerland, 8-19 July 1996), the political and more controversial discussion on whether and how to include JI in the Protocol took place at the AGBM meeting (see Chapter 3), whereas AIJ was on the agenda of SBSTA-3 (JIN, 1996). The AIJ discussions had a low political profile as it mainly focussed on the issue of reporting, particularly on how to improve the initial framework for reporting on AIJ projects.

The UNFCCC secretariat submitted to SBSTA-3 its 'Progress Report on Activities Implemented Jointly', which contained a summary of officially reported AIJ reports and a description of the official AIJ programmes set up by six Annex I countries – Australia, Canada, Germany, the Netherlands, Norway and USA (UNFCCC, 1996c). The report concluded that the project reports submitted were not always very clear about the additionality of reported GHG emission reductions and cost-effectiveness of AIJ projects. Based on that, delegates recommended improved guidance to project developers in order to improve the consistency of submitted reports. On the basis of the discussions at COP-2 and the suggestions and recommendations received from Parties, SBSTA-5 (Bonn, 25-28 February 1997) adopted a Uniform Reporting Format for AIJ projects (URF), both for reporting on AIJ projects and national AIJ programmes (JIN, 1997a).

At SBSTA-7 (Bonn, Germany, 20-29 October 1997),[64] the UNFCCC secretariat presented a 'Synthesis Report on AIJ' based on 39 AIJ project activities (UNFCCC, 1997c)[65] and twelve national AIJ programme reports: Australia, Canada, Costa Rica (see Figure 4-2 for an example of a Costa Rican AIJ carbon credit), Germany, Japan, Mexico, the Netherlands, Norway, Poland, Sweden, Switzerland, and USA. Almost half of the AIJ projects reported in October 1997 were renewable energy projects of which two-third had been set up in Central and Eastern Europe. One-third of the projects were energy efficiency projects of which the majority again was located in Central and Eastern Europe. Of the 39 projects reported, 28 were in Central and Eastern Europe, one in Africa, and ten in Latin America and the Caribbean.

With respect to the technical and financial aspects of the projects, the information reported was rather scanty. The secretariat noted that the description of project baselines was in most cases only brief. Except for one project where the baseline was chosen from a number of alternative scenarios, the reference scenario was in many cases simply based on an assumption that current unsustainable business-as-usual energy/heat consumption patterns would continue to exist. Concerning the

[64] SBSTA-6 was held in July 1997.
[65] Note that by October 1997 already 62 AIJ projects had been reported to the UNFCCC secretariat of which 39 had used either the initial reporting format or the URF.

calculation of costs per ton CO_2 emission reduction, the secretariat concluded that a clearer definition for reporting was required. Although many countries provided cost figures, it was not always clear which methodologies had been used for the cost calculations. According to the synthesis report, the basis for calculating the mitigation cost was often insufficiently explained, so that "information supplied by Parties does not always allow replication" (UNFCCC, 1997c).

On the other hand, the AIJ project reports contained relatively detailed information on the environmental, social/cultural and economic benefits of the project, such as contribution to improving water quality, fostering biodiversity and reducing erosion of hydrological resources. Examples of social/cultural benefits of AIJ pilot projects listed in the reports were the active involvement of the local communities in the host countries and the increased public awareness. According to the project reports, economic benefits mainly resulted from efficiency gains through the introduction of new technologies, improved working environment and energy savings in the host countries.

Generally, the activities set up under the AIJ phase could be categorised as follows. First, AIJ simulation studies were conducted based on already ongoing (*i.e.* implemented before 1995) bilateral cooperation projects in the field of, *e.g.*, energy transition, technology diffusion, *etc*. Examples of simulation projects were the early experiences with JI supported by the government of Norway (ILUMEX and Kraków coal-to-gas projects) (JIN, 1997b). Other JI simulation studies were carried out by the Netherlands' Government on the basis of projects already established in the early 1990s under the programme PSO,[66] which supported Central and Eastern European countries in modernising their energy sector during the post-1989 economic transition processes. The Nordic Council of Ministers' Ad-hoc Group on Climate Strategies in the Energy Sector carried out another simulation study based on actual projects.

A second category of AIJ consisted of new projects prepared after COP-1 by private entities and approved as AIJ by the designated authorities of both the investor and host countries. These projects obtained an official AIJ status and were reported to the UNFCCC secretariat, but mainly relied on private sector financing to go ahead. For a long time during the AIJ pilot phase, the majority of these projects existed only on paper and the experience gathered was generally limited to project design issues only. The USIJI and the AIJ Japan Programme contained typical examples of activities in this category.

The third category of AIJ consisted of projects which were mainly funded by investor country governments. The implementation of these activities was, therefore, not hampered by a lack of interest from private sector investors. Most of the projects in this category were investments by the Swedish Government in Estonia, Latvia and Lithuania. These projects were mainly small-scale energy sector investments set up along the lines of a project design and implementation model, which could easily be replicated in each of the three Baltic States. In addition, the Netherlands' Government ran an AIJ programme during 1997-1999 which provided funding and assistance to private sector project investors. The total budget of the Dutch AIJ programme amounted to almost USD 100 million. A third programme which provided investment funds for projects in Central Europe was the Swiss AIJ pilot programme. The Swiss Government did not initiate a large number of projects, but invested a lot in

[66] The official Dutch name of this programme is: Programma Samenwerking Oost-Europa (PSO).

streamlining the design of future JI projects, such as baseline determination, dealing with additionality, and minimising carbon leakage effects (see also Chapter 5).

Table 4-1 presents an overview of Annex I investor countries in AIJ projects (based on an overview presented by the secretariat in 2002), the number of projects they were involved in and the role played by the Parties in terms of facilitation and/or funding (UNFCCC, 2002a). Box 4-5 briefly summarises the main experiences with the AIJ pilot phase.

Table 4-1. Involvement of Annex I investor countries in AIJ projects

Country	**No. projects**	**Type of project funding**
Sweden	53	Public funding
USA	44	Private sector funding with government facilitation
Netherlands	24	▪ Simulation studies ▪ Public funding (AIJ in Eastern Europe, Ministry of Economic Affairs) ▪ Private sector funding (AIJ in developing countries, Ministry of Foreign Affairs)
Australia	10	Private sector funding
Norway	6	▪ Simulation studies ▪ Public funding
Germany	6	Private sector funding
Japan	5	Private sector funding
France	4	Private sector funding
Switzerland	2	Public funding
Belgium	1	Simulation study
Canada/Germany/ France	1	Private sector funding
Total	156	

Source: UNFCCC, 2002a

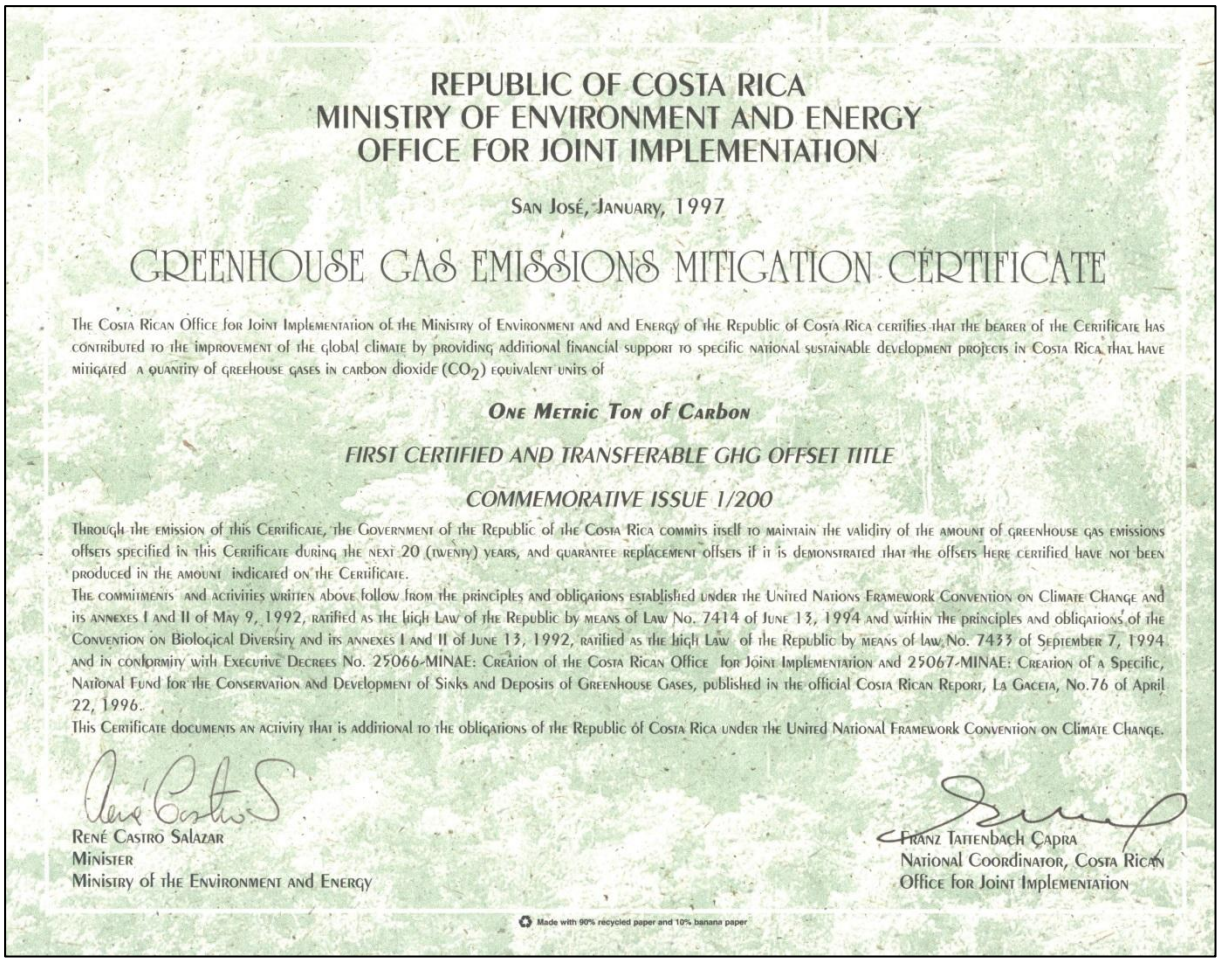
Box 4-5. Experiences from the AIJ pilot phase

During the AIJ pilot phase (from 1995 through 2000), 156 projects were endorsed by governments of both investor and host countries and published on the UNFCCC Internet site (UNFCCC, 2002a). Together, these projects aimed at an emission reduction of 446 Mt CO_2-eq., although it should be noted that several of projects have never been implemented due to lack of funding from the private sector. Moreover, other AIJ projects were mainly simulation activities based on already implemented projects, which were studied as if they were AIJ. The latter projects were especially set up by the Netherlands and Norway between 1994 and 1996.

Although AIJ resulted in several investor and host country initiatives to facilitate JI cooperation and enabled several potential stakeholders to become acquainted with the JI concept, including its GHG accounting issues, the initial hesitation among developing countries to embrace the JI/AIJ concept and the absence of crediting of emission reductions turned out to be a serious barrier to large-scale implementation of AIJ project ideas.

From a practical perspective, it turned out that the preparation and implementation of AIJ projects, either in the energy sector or in other sectors, generally turned out to be rather time consuming. To a large extent, this was due to the fact that AIJ was a rather new concept which required a number of additional project design elements in comparison with regular ODA projects or FDIs, *e.g.*, identifying suitable abatement investment options, accounting of the GHG emission reductions (baseline, monitoring, verification, and carbon leakage assessments), and applying for approval of the project with the designated authorities of the host and investor countries. Governments and other stakeholders had no experience with this type of investment and also the market for environmental consultants was not as deep as it became after the entry-into-force of the Kyoto Protocol.

The AIJ experience showed that especially the cooperation between the host country governments and the private sector entities was often difficult. Although some host countries officially established JI secretariats or focal points, these were generally understaffed and did not have the authority to endorse a project as AIJ. In practice, it regularly happened that projects which had been identified by private sector parties in both the industrialised and host country and which had been approved by the government of the investor country, were not implemented or with a significant delay because of difficulties in finding the right official to endorse projects. For instance, prior to COP-1, the Netherlands had agreed with the Ministry of Environment in Uganda on recognising a forestry project, set up by the Dutch FACE foundation and their colleagues from Uganda, as an early JI experience. Later on, it turned out that this agreement was insufficient for an AIJ status because the Ministry of Foreign Affairs in Uganda was responsible for UNFCCC matters.



REPUBLIC OF COSTA RICA
MINISTRY OF ENVIRONMENT AND ENERGY
OFFICE FOR JOINT IMPLEMENTATION

SAN JOSÉ, JANUARY, 1997

GREENHOUSE GAS EMISSIONS MITIGATION CERTIFICATE

THE COSTA RICAN OFFICE FOR JOINT IMPLEMENTATION OF THE MINISTRY OF ENVIRONMENT AND AND ENERGY OF THE REPUBLIC OF COSTA RICA CERTIFIES THAT THE BEARER OF THE CERTIFICATE HAS CONTRIBUTED TO THE IMPROVEMENT OF THE GLOBAL CLIMATE BY PROVIDING ADDITIONAL FINANCIAL SUPPORT TO SPECIFIC NATIONAL SUSTAINABLE DEVELOPMENT PROJECTS IN COSTA RICA, THAT HAVE MITIGATED A QUANTITY OF GREEHOUSE GASES IN CARBON DIOXIDE (CO_2) EQUIVALENT UNITS OF

ONE METRIC TON of CARBON

FIRST CERTIFIED AND TRANSFERABLE GHG OFFSET TITLE

COMMEMORATIVE ISSUE 1/200

THROUGH THE EMISSION OF THIS CERTIFICATE, THE GOVERNMENT OF THE REPUBLIC OF THE COSTA RICA COMMITS ITSELF TO MAINTAIN THE VALIDITY OF THE AMOUNT OF GREENHOUSE GAS EMISSIONS OFFSETS SPECIFIED IN THIS CERTIFICATE DURING THE NEXT 20 (TWENTY) YEARS, AND GUARANTEE REPLACEMENT OFFSETS IF IT IS DEMONSTRATED THAT THE OFFSETS HERE CERTIFIED HAVE NOT BEEN PRODUCED IN THE AMOUNT INDICATED ON THE CERTIFICATE.

THE COMMITMENTS AND ACTIVITIES WRITTEN ABOVE FOLLOW FROM THE PRINCIPLES AND OBLIGATIONS ESTABLISHED UNDER THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE AND ITS ANNEXES I AND II OF MAY 9, 1992, RATIFIED AS THE HIGH LAW OF THE REPUBLIC BY MEANS OF LAW NO. 7414 OF JUNE 13, 1994 AND WITHIN THE PRINCIPLES AND OBLIGATIONS OF THE CONVENTION ON BIOLOGICAL DIVERSITY AND ITS ANNEXES I AND II OF JUNE 13, 1992, RATIFIED AS THE HIGH LAW OF THE REPUBLIC BY MEANS OF LAW NO. 7433 OF SEPTEMBER 7, 1994 AND IN CONFORMITY WITH EXECUTIVE DECREES NO. 25066-MINAE: CREATION OF THE COSTA RICAN OFFICE FOR JOINT IMPLEMENTATION AND 25067-MINAE: CREATION OF A SPECIFIC, NATIONAL FUND FOR THE CONSERVATION AND DEVELOPMENT OF SINKS AND DEPOSITS OF GREENHOUSE GASES, PUBLISHED IN THE OFFICIAL COSTA RICAN REPORT, LA GACETA, NO.76 OF APRIL 22, 1996.

THIS CERTIFICATE DOCUMENTS AN ACTIVITY THAT IS ADDITIONAL TO THE OBLIGATIONS OF THE REPUBLIC OF COSTA RICA UNDER THE UNITED NATIONAL FRAMEWORK CONVENTION ON CLIMATE CHANGE.

RENÉ CASTRO SALAZAR
MINISTER
MINISTRY OF THE ENVIRONMENT AND ENERGY

FRANZ TATTENBACH CAPRA
NATIONAL COORDINATOR, COSTA RICAN
OFFICE FOR JOINT IMPLEMENTATION

Made with 90% recycled paper and 10% banana paper

Figure 4-2. Costa Rica's GHG emissions mitigation certificate

4.6. Inclusion of JI in the Kyoto Protocol

Although the discussions on progress with the AIJ pilot phase at SBSTA-7 put emphasis on technical and methodological issues related to the JI concept, most of the political attention concerning JI, as mentioned above, was on the negotiations in the context of the Berlin Mandate. At AGBM-8, which took place in Bonn at same time of the SBSTA-7 (October 1997), Chairman Mr Raúl Estrada-Oyuela presented a draft negotiation text for a 'Protocol or another legal instrument' to be decided upon at COP-3 (see Chapter 3) (UNFCCC, 1997a).

Article 6 of this text dealt with JI and stated that Parties participating in JI projects would have the right to share the credits among themselves in accordance with their contribution to the project. These credits could only be generated if the projects would meet a number of conditions, including the COP-1 criteria for AIJ. Additional conditions proposed were that JI projects should be assessed on a project basis and that credits would have to be calculated and allocated on an annual basis. According to the draft negotiation text, the first Meeting of the Parties to the Protocol would have to take decisions on criteria, guidelines and methodologies for: the attribution of credits to Parties; the reporting on JI

projects; the calculation of baselines; the monitoring and verification of JI emission reductions; and, the auditing of credits.

To the surprise of several observers, the draft negotiation text distinguished between JI among Annex I Parties and JI between Annex I Parties and non-Annex I Parties. The text (which was largely based on a Norwegian proposal to AGBM-6, as well as on the EU proposal) suggested that JI with non-Annex I Parties would be eligible under the Protocol once the AIJ pilot phase would have been satisfactorily concluded, such to be judged by the COP based on progress made with AIJ.[67] A possible date for the latter judgement could be just after the planned conclusion of the AIJ pilot phase in 2000. The US Climate Proposal for COP-3 (presented in October 1997), however, proposed not to wait until the end of the AIJ pilot phase and to already include crediting of JI projects with non-Annex I countries in the Protocol to be decided at COP-3 (Earth Negotiations Bulletin, 1997b, p. 15). Developing countries, on their turn, underscored that they preferred to wait for the conclusion of the AIJ pilot phase before taking a decision on the eligibility of JI between Annex I and non-Annex I Parties.

As has been described in Chapter 3, COP-3 in Kyoto (Japan, 1-10 December 1997) resulted in an agreement on the Kyoto Protocol, which included quantified emission limitation or reduction commitments (QELRCs) for Annex I Parties, expressed as assigned amounts of GHG emission per year. As a group, these countries agreed to reduce their GHG emissions by 5.2% over the period 2008-2012 (the so-called first commitment period) (Earth Negotiations Bulletin, 1997b, p. 14). Surprisingly, COP-3 decided to allow Annex I Parties the flexibility to fulfil part of their QELRCs by acquiring emission reduction titles generated abroad on the territory of another Party and/or by another Party. During the AGBM negotiations, concerning flexibility the focus had mainly been on JI among Annex I Parties, with a possible extension to JI with developing countries after the conclusion of the AIJ pilot phase, and international emissions trading. The Kyoto Protocol went further than that by also including JI cooperation with developing countries, irrespective of the AIJ experience. As such, the following three Kyoto flexibility mechanisms were decided upon (UNFCCC, 1998):

- *Article 6 cooperation* (Kyoto Protocol Article 6), which deals with project-based GHG emission reduction cooperation among industrialised (Annex I) Parties. Credits generated through these JI projects are called Emission Reduction Units (ERU).
- The *Clean Development Mechanism (CDM)* (Kyoto Protocol Article 12), which deals with project-based GHG emission reduction cooperation between industrialised (Annex I) and developing (non-Annex I) Parties. Emission reductions achieved through CDM projects can be transferred to Annex I Parties as Certified Emission Reductions (CER).
- *International Emissions Trading* (Kyoto Protocol Article 17), which allows Parties with GHG emissions below their assigned amount under the Kyoto Protocol to sell this surplus to other Parties whose GHG emissions surpass their assigned amount.

The envisaged Article 6 and CDM cooperation are both based on the JI concept discussed in this chapter. The CDM was introduced in the COP-3 negotiations based on a proposal by Brazil to establish a mechanism to compensate for social and economic losses by non-Annex I Parties in case Annex I Parties fail to comply with their QELRCs. The compensation fund would arrange financial and technology transfers from non-complying Annex I Parties to non-Annex I Parties, *e.g.*, for

[67] Para. 6 of the proposed Article 6 (UNFCCC, 1997a).

adaptation measures. During the negotiations, the Brazilian compensation mechanism proposal eventually developed into the CDM, based on the JI concept,[68] but with a specific focus on sustainable development in non-Annex I host countries next to GHG emission reduction. The latter increased the acceptability of the CDM for developing countries as the mechanism, unlike Article 6 JI cooperation, has a clearly stated twin-aim objective: first, a CDM project must support non-Annex I Parties in achieving a sustainable development path, and, second, a CDM project can support Annex I Parties in complying with their QELRCs (UNFCCC, 1998, pp. pp.11-12, Art. 12).

Nonetheless, for many observers the inclusion of the CDM in the Kyoto Protocol was a big surprise as it basically allowed the JI cooperation between Annex I and non-Annex I Parties which mainly the USA had proposed at the AGBM. Developing countries, supported by the EU, had long preferred to wait for the conclusion of the AIJ pilot phase before considering such a global project-based cooperation. Also surprising was the option of banking CDM project-based emission reductions achieved during 2000-2008 and to add these to the assigned amounts of Annex I Parties during 2008-2012. JI crediting, on the contrary, could only start as of 2008. One could therefore conclude that the option of JI with non-Annex I Parties (the CDM), which had been generally rejected throughout the AGBM process, eventually contained much more flexibility than the initially widely accepted option of only JI among Annex I Parties.

Yet, several questions concerning the institutional structure of the CDM remained unanswered at COP-3. Article 12 of the Kyoto Protocol on the CDM was unclear about whether the CDM would become a multilateral fund to invest, on behalf of public and private parties from Annex I countries, in projects in non-Annex I Parties or a more passive facility under the UNFCCC with an 'executive board' (UNFCCC, 1998, pp. 11-12, Art. 12) supervising bilateral and multilateral project cooperation. This was one of the issues to be decided upon by the COP serving as the Meeting of the Parties to the Protocol (COP-MOP, which would have its first meeting after the entry into force of the Kyoto Protocol).

A similar guidance was needed with regard to the question of how to deal with CDM projects in non-Annex I Parties which have not yet ratified the Kyoto Protocol. Article 12 referred to non-Annex I Parties (under the UNFCCC), but did not specify whether such Parties also need to have ratified the Protocol. In other words, could CDM projects be carried out in countries that have ratified the UNFCCC but not (yet) the Kyoto Protocol?

Finally, soon after COP-3 a discussion arose on the extent to which sink enhancement projects would be eligible under the CDM. After all, contrary to Article 6, Article 12 on the CDM did not explicitly refer to sink enhancement projects and only mentioned emission reduction activities as CDM project options. Basically, this would exclude carbon sequestration projects, such as forestry and soil management, from the CDM. However, sink enhancement was included in protocol Article 3 (defining Annex I Party commitments) as a feasible option for Parties to fulfil their commitments, although the Article text only referred to GHG emission reduction options (UNFCCC, 1998, pp. 3-5, Art. 3). In analogy to Article 3, sink enhancement projects under the CDM could thus also be categorised under

[68] An advantage of applying the CDM system over the Brazilian 'non-compliance fund' (Earth Negotiations Bulletin, 1997b, pp. 7,11,14) is that technology transfers under the CDM could already start as of 2000 instead of only after the first commitment period when it would be known which Parties have complied with their QELRCs and which not.

emission reduction activities. Further guidance on these issues were scheduled for COP-4 in Buenos Aires (November 1998).

By November 2014, the JI market had developed into a pipeline of 761 projects in Central and Eastern Europe. Table 4-2 presents an overview of the number of projects per project type and share in total CDM market as well as the GHG emission reductions achieved during the first commitment period of the Kyoto Protocol. Since the Doha Agreement at COP-18 JI remains among the Kyoto flexibility mechanisms which Parties with commitments during the second commitment period can use for their compliance purposes (UNFCCC, 2013b). An overview of CDM projects is presented in the next chapter in Table 5-2).

Table 4-2. Status of JI projects as per November 2014

Type	No. of projects	%	Issued ERUs (ktonnes)	%
Afforestation	2	0,3	4,557	0,5
Agriculture	12	1,6	25,603	3,0
Avoided deforestation	1	0,1	520	0,1
Biomass energy	48	6,3	8,549	1,0
Cement	5	0,7	4,417	0,5
CO_2 usage	1	0,1	0	0,0
Coal bed/mine methane	33	4,3	9,774	1,2
Energy distribution	56	7,4	60,188	7,1
Energy Efficiency households	1	0,1	2,698	0,3
Energy Efficiency industry	103	13,5	111,803	13,2
Energy Efficiency own generation	7	0,9	1,385	0,2
Energy Efficiency service	14	1,8	13,953	1,6
Energy Efficiency supply side	37	4,9	17,020	2,0
Fossil fuel switch	24	3,2	24,854	2,9
Fugitive emission reduction	172	22,6	419,018	49,3
Geothermal	5	0,7	1,010	0,1
HFCs	4	0,5	40,117	4,7
Hydro energy	27	3,5	5,953	0,7
Landfill gas capture	83	10,9	2,900	0,3
Methane avoidance	8	1,1	1,699	0,2
Mixed renewables	0	0,0	0	0,0
N_2O	55	7,2	57,297	6,7
PFCs and SF_6	8	1,1	30,511	3,6
Reforestation	0	0,0	0	0,0
Solar energy	1	0,1	0	0,0
Tidal energy	0	0,0	0	0,0
Transport	4	0,5	0	0,0
Wind energy	50	6,6	6,080	0,7
Total	761	100,0	849,906	100,0

Source: Fenhamm, 2014b

4.7. Discussion: JI Negotiations in Light of Design, Process and Tactics Conditions

Five and a half year after the inclusion of JI in the UNFCCC, the concept had been included in the Kyoto Protocol in the form of two flexibility mechanisms to facilitate project-based collaboration among industrialised countries and between industrialised and developing countries, on a global scale. This result was the outcome of seven INC sessions (between 1992 and 1995), three COP sessions, seven SBSTA sessions and eight AGBM sessions (all between 1995 and 1997), which each contributed to long political and technical debates on the JI concept. Below, these negotiations are discussed in light of the question whether and how the three basic conditions identified in this study for negotiations have been met.

Meeting basic condition 1: design of JI and CDM for inclusion in the Kyoto Protocol

With respect to the **design structure** of JI and CDM, it became clear that the strength of JI lies in its:

- Ability to reduce global costs of GHG emission reduction actions, as these could be selected in locations where costs are relatively low. As such, the JI concept enables optimal use of the characteristic of GHGs that they mix evenly in the atmosphere.
- Potential to engage countries in GHG emission reduction actions through projects, even if these countries have not adopted quantified emission reduction commitments themselves.
- Potential to support low-emission technology transfer between industrialised countries and from industrialised to developing countries.

Industrialised countries were mainly attracted to JI because of its cost-effectiveness potential, which explains why they supported its application to reaching UNFCCC targets and its inclusion as a flexibility mechanism in the Kyoto Protocol.

At the same time, negotiations revealed that JI had inherent weaknesses, such as the:

- Aspect that widespread application of JI could postpone pathways in industrialised countries towards low GHG emission growth.
- Risk that JI projects would mainly address GHG emission reductions and insufficiently consider host countries' sustainable development objectives (*e.g.*, risk of too many forestry projects while the host country may be more interested in energy or industrial sector projects).
- Complexity related to the accounting of GHG emission reductions with risks of non-additional emission reductions.

In the design of JI and the CDM in the Kyoto Protocol, especially the CDM definition explicitly contains the condition that projects should be in accordance with host countries' sustainable development goals. The GHG accounting rules, what they need to look like and how strict, were not defined at COP-3. Instead, this design aspect was left for later COP negotiations and this will be discussed in the next two chapters.

This implies that with the eventual conceptual design of JI and CDM in the Kyoto Protocol, without the operational details, basic condition 1 was met during the negotiations, as it addresses all main

motivations and concerns of negotiation Parties: a global scope with crediting of GHG emission reductions as desired by several industrialised countries and an explicit focus on sustainable development when designing CDM projects as desired by developing countries. In terms of Figure 1-3, negotiations moved from point A (*e.g.*, Norwegian Clearinghouse proposal at INC-3 in 1991) to point B when developing countries expressed concerns about the risk that JI would allow industrialised to postpone domestic abatement actions. The inclusion of a specific focus on sustainable development in CDM host countries stimulated developing country acceptance (from the B to C/D in Figure 1-3), which was also enhanced through the link between inclusion of flexibility mechanisms in the Kyoto Protocol and industrialised countries' agreed QELRCs. It must be noted though that agreement on the design of JI and CDM was also facilitated by postponing discussions on operational modalities of the mechanisms to later negotiation sessions (as discussed in Chapter 5).

Meeting basic condition 2: the negotiation process as enabling condition for JI and CDM adoption in the Kyoto Protocol

During the 1993-1997 **negotiation process**, the key issue related to JI was whether industrialised countries could obtain the flexibility to achieve their quantitative GHG abatement commitments partly abroad. Developing countries, speaking with the voices of the G-77&China and the AOSIS, generally opposed JI and considered the mechanism a cheap way out of Annex I Parties' potential commitments. The main argument used in this respect related to equity considerations between industrialised and developing countries.

The controversies that surrounded JI during the INC negotiations resulted in a situation in which JI as a full-blown mechanism (including crediting of GHG emission reductions) had become politically unacceptable by the time of COP-1. At that time, though, the negotiation process enabled taking a side-step to keep the JI concept 'alive', as the COP decided to establish a pilot phase for JI (called AIJ). AIJ was sufficiently remote from the initial concept of JI to make it acceptable for developing countries, but an opening remained for industrialised countries to include JI as a concept in the Kyoto Protocol. Officially, AIJ was negotiated at COP-1 as an intermediate step in a 'phased approach' towards use of JI as a future carbon crediting instrument under the UNFCCC. This process allowed negotiators the flexibility to address developing countries' concerns about JI, so that, eventually, the Kyoto flexibility mechanisms became acceptable for developing countries too (supporting a development towards outcome D in Figure 1-3).

In that respect, it can be concluded that the negotiation process with 25 different negotiation sessions (COP, SB, AGBM) with different political profiles (*i.e.* high-level climate policy making next to more technical negotiations) was an important enabling condition for inclusion of JI (and CDM) in the Kyoto Protocol (meeting basic condition 2).

Meeting basic condition 3: decisive negotiation tactics and facilitating aspects during JI negotiations

While the JI negotiation process during 1993-1997 was characterised by taking several small steps at the time at consecutive negotiation meetings, and sometimes even during parallel negotiation processes, the eventual inclusion of Article 6 JI cooperation and the CDM in the Kyoto Protocol can

also be largely explained by country **tactics during the negotiations**. For instance, it could be argued that the patience of JI proponents during the negotiations paid off during the AGBM process and at COP-3. By accepting, at COP-1, a phased approach for JI and refraining from crediting of JI emission reductions, JI could, after a while, become an important instrument in the debate on flexibility which industrialised countries demanded in return for adopting quantified emission reduction or limitation commitments (see Chapter 2).

The above also illustrates that national interests played a key role during JI negotiations. For industrialised countries, JI was a welcome mechanism for enhancing domestic political support for adopting QELRCs. Moreover, several business groups in industrialised countries who were specialised in producing sustainable energy technologies, considered JI an attractive instrument to promote their business internationally. Especially these groups showed a large interest in establishing AIJ projects.

The national interest picture for developing countries was much less clear. Often, it was found that considerable differences existed between official negotiation positions of developing country governments at INC, AGBM and COP sessions and the opinion of local stakeholders on JI (see for example Box 4-1 on the Groningen Conference on JI). The first group focussed largely on equity principles (*i.e.* industrialised countries should reform their economies first), whereas the latter group also stated that JI projects could lead to additional transfers of sustainable energy technologies and funding to developing countries. Moreover, although developing countries mainly spoke via the G-77&China, several Latin American countries were quite positive about JI and signed bilateral agreements with the USA and some EU countries to further stimulate JI and AIJ cooperation. The rather negative G-77&China position on JI was mainly the result of the opposition from China and India to the mechanism (in terms of combining it with Annex I QELRCs). Eventually, the strong G-77&China resistance to JI became to some extent beneficial for developing countries, since the CDM explicitly defined sustainable development as a key important project requirement.

Finally, next to the negotiation process, an important tactical aspect supporting the development of JI into flexibility mechanisms under the Kyoto Protocol was the awareness building through conferences, publications and pilot projects. At conferences, such as the 1994 Groningen International Conference on JI, the 1995 Ministerial Conference on JI in Sofia, the 1996-1997 Regional Conferences on JI (Prague) and AIJ (New Delhi), negotiators could meet with JI practitioners and learn more about JI project benefits and risks. Through the publication 'Joint Implementation Quarterly', funded by the Netherlands Government, a platform was created with latest information on negotiations, policy background, research and projects. These meetings and publications were especially important during the pre- and early-Internet days during which JI negotiations took place. Finally, the initiative of countries such as the Netherlands, USA, Norway, Sweden and Germany to set up JI/AIJ pilot project programmes showed how JI could work and how collaboration and trust between JI investors and hosts could be built. The main contribution of these tactical and facilitating aspects during negotiations is that they supported building of awareness of JI/CDM benefits, costs and risks and therefore enhanced trust among developing countries that JI/CDM could support their domestic development.

Without the tactical manoeuvres by key negotiators at COP-1 and COP-3 concerning the decisions on AIJ and CDM with global coverage, the JI concept might not have been included in the Kyoto Protocol. In that respect, this chapter has shown that tactics became an important condition for reaching agreement on AIJ, JI and CDM (meeting basic condition 3). Without these manoeuvres, JI

may either have disappeared (at least temporarily until after the Kyoto Protocol) or continued as a mechanism for project cooperation between industrialised countries, which would also have complicated meeting basic condition 1.

The above is summarised in Table 4-3.

Table 4-3. Design, process-related and tactical aspects related to negotiations on JI.

	Description of basic condition in negotiation file	Extent to which basic condition was met
1. Design of policy (instrument)	*Scope*: • JI project cooperation between developed and developing countries (JI and CDM) • JI was not used for achieving 1990-2000 stabilisation targets of Annex I Parties under the UNFCCC *Principles*: • As GHG emissions mix evenly in the atmosphere, emission reductions can be done where costs are lowest • JI should not be excuse for postponing emission reduction actions in industrialised countries *Goals*: • Achieving GHG emission reductions at lower costs and contributing to the ultimate objective of the UNFCCC *Means*: • Accounting processes of GHG emission reductions • Condition that CDM projects assist non-Annex I Parties in achieving sustainable development	(+) All main motivations and concerns of negotiating Parties addressed by negotiation text: cost-effectiveness potential of JI and CDM could be utilised by industrialised countries while CDM-projects would have to contribute to sustainable development in host countries (note that negotiations on detailed project modalities and accounting rules were left to subsequent negotiations, as discussed in Chapters 5 and 6).
2. Enabling negotiation process	*Meetings*: • Annual COP sessions • Meetings of AGBM + SBSTA technical negotiations • Ministerial meetings outside context of COP *Strategy*: • JI was first discussed under AGBM as possible instrument under the Kyoto Protocol • Then, the discussion moved to SBSTA with a focus on a pilot phase for Activities Implemented Jointly • Before COP-3, JI negotiations moved to AGBM again *Responsibility*: • AGBM discussed JI as part of the protocol negotiations • SBSTA focussed on organisation of AIJ pilot phase, including reporting and synthesising project results	(+) Flexibility to switch from one negotiation process to another. When JI became a politically sensitive issue during negotiations on a protocol with commitments, negotiations on JI continued with more technical discussions, based on the JI pilot phase called AIJ. After this 'break', JI could be reintroduced at the COP-3 negotiations to support industrialised countries with complying with emission reduction commitments.
3. Decisive tactics and facilitation	• Environmental NGOs resisted JI as it would postpone necessary abatement action in industrialised countries • JI information was scarce. Investments in awareness building (*e.g.*, *JIQ* and Regional conferences) improved JI knowledge base • Country groups did not have uniform positions: Annex I Parties disagreed about the need for JI crediting; within G77&China, China and India were against JI while several Latin American countries were in favour of it • Annex I Parties showed patience at COP-1 and adopted an AIJ pilot phase without crediting. Although AIJ did not allow GHG crediting, several Annex I Parties took it seriously by setting up pilot projects through which collaboration with non-Annex I Parties could be initiated	(+) Tactical move to introduce JI pilot phase, called AIJ (see basic condition 2) (+) Business community presenting their own JI pilots (+) Awareness building regarding JI via regional conferences, dedicated newsletters and AIJ pilot projects

Chapter 5. Negotiations on Modalities and Procedures for Kyoto Flexibility Mechanisms

5.1. Introduction

The adoption at COP-3 of the Kyoto Protocol marked the start of a new series of negotiations to formulate guidelines, modalities and procedures for Parties to fulfil their commitments agreed at Kyoto. Although the Kyoto Protocol had specified quantified emission limitation and reduction commitments (QELRCs) for industrialised countries and defined mechanisms to meet these, several modalities and procedures needed to be worked out in further detail for such issues as: establishing systems for national GHG inventories; how and to what extent QELRCs could be met through land use, land-use change and forestry (LULUCF) activities;[69] the accounting of GHG emission reductions through Joint Implementation (JI) and Clean Development Mechanism (CDM) projects; and the accountability of JI and CDM credits against QELRCs.[70]

This chapter focuses on negotiations on the guidelines, modalities and procedures for the project-based Kyoto flexibility mechanisms: Article 6 project cooperation among Annex I Parties (generally dubbed as JI) and the CDM (Article 12). These negotiations took place between 1998 and 2005 (when the Kyoto Protocol entered into force). Similar to what has been observed concerning the discussion in Chapter 4 on the interlinkages between JI negotiations (between 1995 and 1997) and the adoption of the Kyoto Protocol, progress with negotiations on the Kyoto flexibility mechanisms during 1998-2005 was an important factor towards the eventual entry-into-force of the Kyoto Protocol in 2005. At the same time, negotiations on the operationalisation of the Kyoto flexibility mechanisms formed a negotiation process in itself under the UNFCCC, with, for instance, a tension between, on the one hand, determining detailed GHG accounting procedures to assure that claimed emission reductions would be real, additional and verifiable (with possibly higher transaction costs) and, on the other hand, realising a wide, international participation in JI and CDM projects (with possibly a preference for less detailed procedures).

This chapter addresses whether the three basic conditions for climate negotiations (identified for the research questions in Chapter 1) have been met during the negotiations on the Kyoto flexibility mechanisms, in terms of: whether and how the negotiations 'produced' the design elements for an agreement on the flexibility mechanisms which sufficiently reflected Parties' views and preferences (*e.g.*, low-cost emission reductions, sustainable development support and integer GHG accounting procedures); whether and how the negotiation process enabled considering and combining these elements in a package on which consensus could be reached; and whether and how negotiation tactics enabled bridging gaps between Parties' negotiation positions, so that the eventual package could be widely accepted and implemented while producing real, additional and verifiable JI and CDM emission reduction credits.

[69] As indicated in Kyoto Protocol Article 3.3 and 3.4 (UNFCCC, 1998).
[70] Kyoto Protocol Articles 6 (JI) and 12 (CDM) (UNFCCC, 1998).

Negotiations on the operationalisation of the Kyoto flexibility mechanisms can roughly be divided in two phases: 1998-2001 and 2001-2005. During the first phase, negotiations largely focused on how and to what extent Annex I Parties could use JI and CDM for complying with their QELRCs, what would be eligible JI and CDM project types, and how to calculate GHG emission reductions from JI and CDM projects. This phase was concluded at COP-7 (Marrakech, Morocco, 2001) with the adoption of the 'Marrakech Accords' (UNFCCC, 2002b). During the second phase, between 2002 and 2005, negotiations on JI and CDM largely took place outside the official scope of the COP (perhaps with the exception of the 'forestry COP', COP-9, Milan, 2003) and more within the context of the CDM Executive Board (UNFCCC, 2002b, p. 21) and the JI Supervisory Committee (UNFCCC, 2002b, p. 6). These two bodies were established in 2001 to design and supervise the processes for validation of JI and CDM project plans, verification of project achievements and certification of emission reduction credits.[71] The first part of this chapter discusses the negotiations during the first phase (Sections 5.2-5.4) and the second part (Section 5.5 and 5.6) analyses the second phase.

5.2. Towards an Integrated Approach for 'Crunch' Issues under the Buenos Aires Plan of Action

One year after 'Kyoto', Parties adopted the 'Buenos Aires Plan of Action' (at COP-4, Buenos Aires, Argentina, November 1998) (UNFCCC, 1999), which was a working agenda to prepare the entry into force of the Kyoto Protocol.[72] Regarding the Kyoto flexibility mechanisms, the Buenos Aires Plan of Action gave priority to the CDM because project activities undertaken under this mechanism could already result in GHG emission reduction credits as of the year 2000 (*i.e*. via the banking option of Article 12.10 of the Kyoto Protocol). JI emission reductions, instead, could only be accounted for when achieved between 2008 and 2012 (Jepma, et al., 1998). Therefore, while there was still enough time to arrange JI modalities and procedures, the time towards the official start of the CDM, 1 January 2000, was very short.

The Buenos Aires Plan of Action was scheduled to be completed by COP-6 (in 2000) (UNFCCC, 1999, p. 37), after which the next COP(s) would formulate the agreement into draft decisions to be adopted later by the first session of the COP serving as the Meeting of the Kyoto Protocol Parties (COP-MOP-1). However, by the time of SB-13[73] (Lyon, France, 4-15 September 2000), which was the last negotiation session before COP-6, progress with the Buenos Aires Plan of Action had been rather slow, also with the CDM (JIN, 2000a) (JIN, 2000b). Sharp *political* dividing lines between Parties blocked agreement on a number of 'crunch issues.'[74] According to the Chairman of the 'Joint SB

[71] Note that the CDM Executive Board was established in 2001 by COP-7, whereas the JI Supervisory Committee was formally only established by the first COP-MOP, held in 2005. Nonetheless, JI activities were already carried out before 2005 and thus provided input into the informal negotiation process on JI and CDM project modalities and procedures.

[72] As explained in Chapter 3, the agreement at COP-3 on the Kyoto Protocol implied that the protocol text was submitted to Parties' national governments for ratification. The protocol would enter into force when 55% of Annex I Party GHG emissions in 1990 were covered by ratifications.

[73] Thirteenth sessions of the UNFCCC Subsidiary Body for Implementation and Subsidiary Body for Scientific and Technical Support and Advise.

[74] 'Crunch issues' was a term used by the UNFCCC secretariat in the context of the Buenos Aires Plan of

Contact Group on the Mechanisms', Mr Chow Kok Kee from Malaysia, negotiations were complicated by the strong interlinkages between the several issues, so that agreements on individual files was difficult to achieve (see below for some examples) (JIN, 2000a, p. 8). Therefore, in his view, an integrated approach was required to address these interlinkages.

At SB-13, Parties could not agree on such an integrated approach or 'package deal' (JIN, 2000b, p. 7). However, the aforementioned Joint SB Contact Group managed to produce a negotiation text on the Kyoto flexibility mechanisms, which was further consolidated at an extra meeting held before COP-6, in New Delhi (India, 16-18 October 2000). Below, the state of play regarding a number of 'crunch issues' prior to COP-6 in November 2000 is described, as well as the opportunities for a balanced trade-off between enhancing environmental integrity and achieving wider support of policy makers and stakeholders. These issues were *politically* rather sensitive because they were directly related to the overall (geographical and intertemporal) flexibility for Annex I Parties to fulfil their Kyoto commitments. Therefore, the discussion on which part of QELRCs to be achieved domestically and which part abroad, which had been temporarily concluded in Kyoto with the adoption of the Kyoto flexibility mechanisms in the protocol, was reopened in the context of the 'Buenos Aires Plan of Action'.

5.2.1. Supplementarity

According to Kyoto Protocol Articles 6.1d and 12.3b, the emission reductions achieved through JI and CDM projects shall be supplemental to industrialised countries' domestic actions for meeting their commitments (UNFCCC, 1998). In other words, a country cannot meet its QELRC fully through emission reduction credits generated abroad without any domestic climate change mitigation action. However, the protocol had not specified what supplemental meant in terms of, *e.g.*, a maximum percentage of 'foreign' credits that could be used for meeting QELRCs.

In the negotiations, the EU took the initiative to formalise the supplementarity concept, mainly because it feared that an over-use of relatively cheap JI and CDM options (as well as international emissions trading through protocol Article 17) would reduce incentives for industrialised countries to stimulate low-emission development domestically. Moreover, the EU Council of Ministers feared that the availability of 'hot air' emissions trading via Article 17,[75] the uncertainties around JI and CDM emission reduction accounting, and the possible eligibility of LULUCF (sinks) projects under the CDM could result in several 'paper credits', *i.e.* claimed emission reductions which in reality may not have taken place. Therefore, the EU Council proposed that at least 50 per cent of Annex I Parties' required GHG emission reductions for compliance with QELRCs should be achieved through domestic abatement actions.[76] The EU proposal for such a ceiling was submitted to the SB-10 sessions

Action.

[75] 'Hot air trading' was a major political issue with respect to international emissions trading (Kyoto Protocol Article 17. At COP-3, some Annex I Parties (*e.g.*, the Russian Federation and Ukraine) negotiated assigned amounts which were much higher than their actual GHG emissions in 1997, so that they Parties were assumed to have negotiated large assigned amount surpluses. This was referred to as 'hot air' since these surpluses were not the direct result of domestic climate and energy policies, but 'mainly' originated from the disintegration of the centrally planned economies.

[76] On 12 May 1999, the EU Council of Environment Ministers agreed, after a long internal discussion, on a common viewpoint regarding the definition of 'supplemental to' and 'part of' in, respectively, Articles 6 and 17,

in Bonn (May-June 1999) and marked the start of a long debate on 'supplementarity.' (Earth Negotiations Bulletin, 1999a, p. 12)

The Umbrella Group strongly criticised the EU proposal because it felt that the extent to which Annex I Parties use the Kyoto flexibility mechanisms should be left to the 'market', given that countries formulate their own national climate policies.[77] Although the Umbrella Group acknowledged that a balanced global climate policy would also contain domestic climate policy investments in industrialised countries, it believed that defining supplementarity is a country-specific issue (Earth Negotiations Bulletin, 1999a, p. 12). For instance, countries which in the past already had carried out energy efficiency programmes may face higher domestic marginal abatement costs than countries which had not initiated such programmes. A ceiling to the use of the Kyoto flexibility mechanisms would confront the first country with higher 'Kyoto' compliance costs than the second country. A free use of the Kyoto flexibility mechanisms, instead, would enable the first country to acquire more JI/CDM credits from abroad than the second country (see Figure 4-1 in Chapter 4).

The G-77&China and the AOSIS welcomed the EU proposal for a ceiling since this was in line with their traditional position that industrialised countries should fulfil a major part of their commitments domestically (Earth Negotiations Bulletin, 1999a, p. 12).

5.2.2. Distinguishing project cycles for JI and CDM projects

The EU, the Umbrella Group and the Central and Eastern European Parties negotiation group CG-11[78] argued in favour of distinguishing between the project cycles for JI and the CDM, because they felt that the required cycle for JI projects could (or even: should) be simpler than the one for CDM projects. The reason for this position was that, contrary to CDM host countries, JI host countries, being Annex I Parties, basically had their emissions capped by the Kyoto Protocol. According to the Kyoto Protocol, emission reductions by JI projects are transferred from the host country Party to the investor country Party as emission reduction units (ERUs). These ERUs were added to the assigned amount of the investor country and subsequently subtracted from the assigned amount of the host country. Consequently, overstatements of the emission reductions achieved through JI projects implied the risk for the host country that the number of ERUs transferred to the investor country would be higher than the actual GHG emission reduction. As such, JI host countries had an incentive to ensure that the emission reductions were not overstated, so that independent third party validation and verification systems would, according to the EU, Umbrella Group and CG-11 Parties, not be required for JI. For the CDM, such an implicit 'yellow flag' mechanism did not exist because CDM host countries, being non-Annex I Parties, did not have their emissions capped by an assigned amount under the Protocol and would thus not be 'punished' for overstating a project's emission reductions to be sold as credits.

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and 12 of the Kyoto Protocol. The EU submitted this viewpoint to the SB and COP negotiations during 1999 and 2000 (JIN, 1999b).

[77] During an informal meeting in June 2000 between US and Dutch government officials (in preparation of COP-6 in the Netherlands), a US government official explained that the USA had considered the EU supplementarity proposal as 'junk mail' (based on personal communication with Dutch government officials).

[78] CG-11 was set up as a negotiating coalition of Central European Annex I parties (UNFCCC, sd): Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

The above, however, only holds when JI host countries comply with Kyoto protocol Articles 5, 7 and 8 on institutional and administrative requirements for determining domestic GHG emission sources. At SB-12 (Bonn, June 2000), the EU, the Umbrella Group and the CG-11 thus agreed that JI procedures could be simpler (a so-called JI fast track or Track I procedure) for those Annex I Parties that comply with these articles (JIN, 2000c) (Earth Negotiations Bulletin, 2000b, pp. 11-12). The key characteristic of such a fast track procedure would be that validation of the project design (including the baseline) and verification of the project results is the responsibility of the Parties involved, without the required supervision by the COP or a designated supervisory body. Should an Annex I Party hosting a JI project not comply with Article 5,7 and 8 requirements, a slow track procedure with external validation and verification, would have to be applied.

The G-77&China did not agree with a JI fast-track proposal, as they wanted JI projects to follow the same track as CDM projects. It should be noted here that these countries' feared more competition from JI projects if JI procedures would become relatively simple (JIN, 2000c) (Earth Negotiations Bulletin, 2000b) (JIN, 2000a, pp. 2-3). Non-Annex I Parties referred to the AIJ experience as described in Chapter 4, which had shown that, apart from the Central Americas, only a few projects were implemented in developing countries. Therefore, several potential CDM host countries feared that their perceived existing competitive disadvantage vis-à-vis Central and Eastern Europe would be made worse by a JI fast track procedure (JIN, 2000a, pp. 2-3).[79]

5.2.3. Eligibility of project types under the CDM

The discussion on project eligibility under the CDM focussed on mainly two issues. First, the EU, AOSIS and several G-77&China Parties supported the opinion that sink enhancement projects (LULUCF) could only be eligible under the CDM once specific sinks-related uncertainties would have been properly dealt with (JIN, 2000a, p. 5) (Earth Negotiations Bulletin, 2000d, pp. 3,4,11,12). The most important of these uncertainties was permanence, which relates to the issue that the sequestration of carbon in forests and soil is often only temporary. For example, due to the rotation period of a forest, sequestered carbon will after some time be released back into the atmosphere. Such 'temporary credits' should lose their value after the rotation period, unless the project partners agree on a forest management programme so that next rotations would follow and the carbon sequestration capacity would remain intact. Also accounting issues as leakage (*e.g.*, a forestry CDM project could lead to moving the deforestation activities to another forest, see also Chapter 4) and the determination of precise sources of carbon sequestration (*e.g.*, soil, trunks, leafs) required much attention during negotiations on CDM project eligibility.

With a view to these uncertainties, the EU proposed to leave sink enhancement projects out of the Kyoto Protocol (both with respect to accounting against Annex I Parties' QELRCs and under JI and CDM), at least for the time being (Earth Negotiations Bulletin, 2000d, pp. 3,4). The EU wanted to

[79] Of course, the CDM offered an advantage that credits achieved as of the year 2000 could be banked for use during the commitment period 2008-2012, but as investors were rather reluctant to set up CDM projects on a large scale without knowing the precise modalities and procedures for projects and how many credits they could retroactively acquire, the bulk of CDM projects were only expected to follow after the entry-into-force of the Kyoto Protocol.

wait for the IPCC Special Report on LULUCF and the recommendations that the COP would provide based on this report (IPCC, 2000a).

The G-77&China did not form a homogeneous group on this topic, though (JIN, 2000a, p. 5). Some Latin American countries, under the leadership of Costa Rica, hoped to acquire additional funding through the CDM for their national forest protection and reforestation programmes and, thus, were strongly in favour of sink enhancement projects under the CDM (JIN, 2000a, p. 5). At SB-12, non-Annex I Parties from Latin America submitted a position paper in which they stressed the potential contribution of sink enhancement CDM projects (forest conservation, reforestation/afforestation and project halting land degradation) to improving biodiversity in the developing countries, restoring the forest coverage, halting a process of soil erosion and bringing about other local ecological benefits (UNFCCC, 2000a, pp. 2-5) (JIN, 2000c, p. 9) (Earth Negotiations Bulletin, 2000c, p. 2). Brazil and Peru were the only Latin American countries that did not agree with this position.

China, India, AOSIS, and Brazil and Peru, on the other side of the G-77&China spectrum, suggested excluding sinks from the CDM because, in their view, relatively cheap sink enhancement projects would (partly) displace the transfer of sustainable energy technologies under the CDM to developing countries (JIN, 2000a, p. 5) (Earth Negotiations Bulletin, 2000b, p. 4). China and India considered CDM energy sector projects to deliver the strongest contribution to their domestic sustainable development. Brazil and Peru stated that forest conservation projects and projects preventing land degradation should not be eligible under the CDM given that contributions to improving biodiversity should come from other international programmes (*e.g.*, the UN Convention on Biological Diversity).

The Umbrella Group strongly supported the inclusion of sinks in the CDM because it felt that such projects would increase cost-effectiveness of the CDM and deliver local ecological benefits to a large group of developing countries (Earth Negotiations Bulletin, 2000d).

A second project eligibility issue was how to determine the contribution of CDM projects to sustainable development in the host countries. A number of non-Annex I countries argued that this judgement should be a sovereign decision of host countries themselves, whereas other countries argued that the COP should at least set some requirements for sustainable development. Also, it was feared that competition among developing countries to host CDM projects could lead to a 'race to the bottom' in terms of an increasing focus on low-cost emission reduction credits and a decreasing focus on sustainable development (JIN, 2000a, p. 5) (Thorne & La Rovere, 1999).

This discussion soon focused on the possible inclusion of nuclear energy and large-scale hydro energy projects in the CDM (JIN, 2000a, p. 5). Basically, if the contribution to sustainable development would be a sovereign judgement of host countries, a CDM host country could decide that nuclear energy would be sustainable from its domestic perspective. Especially at COP-5 (Bonn, October-November 1999) 'pro and con nuke' lobby groups were largely represented in the corridors of the negotiation rooms. Within the meeting rooms, the majority of Parties were reluctant to consider nuclear energy as an eligible project option under the CDM and JI (Earth Negotiations Bulletin, 1999b, p. 12).

At SB-13 (September 2000), the EU proposed a 'positive list of CDM projects' (UNFCCC, 2000b, p. 4), which included projects in the following categories: renewable energy; energy efficiency; and, demand-side management. Project types on the list could be subject to more lenient procedures in

terms of, for example: deciding on project eligibility, project baselines and carrying out validation, monitoring and verification procedures. With this positive list, the EU hoped to contribute to a prompt start of the CDM.

Members of the Umbrella Group opposed the idea of a positive list because it could limit investors' choice from CDM project types. Instead, they supported the suggestion to develop simplified procedures for CDM project development in general, and for small-scale CDM projects in particular. Such simplified procedures would reduce transaction costs of project design and implementation under the CDM. The G-77&China neither supported the positive list idea, because, in their view, it should be up to developing countries themselves to decide on the eligibility of CDM projects.

5.3. Progress with 'Crunch Issues' at Unfinished COP-6

The objective of COP-6 (The Hague, The Netherlands, 13-24 November 2000) was to complete the Buenos Aires Plan of Action. In order to facilitate the negotiations, COP President Mr Jan Pronk, the Dutch Minister of the Environment, submitted a negotiation text, 'Note by the President of COP-6', on all the 'crunch issues' that needed a political agreement by COP-6 (Pronk, 2000).[80] The Note was divided into four sections (see Box 5-1) of which one specifically addressed the issues related to the Kyoto flexibility mechanisms (however, also the other sections addressed issues directly or indirectly related to the mechanisms) and reflected progress made at SB-13.[81] It also took account of the negotiations held in four informal sub-groups of the COP, which had been formed on Tuesday 21 November and finished their work on Thursday 23 November 2000.

Box 5-1. Clusters of issues at COP-6

At COP-6, the issues of the 'Buenos Aires Plan of Action' were clustered in four negotiation clusters A, B, C and D. The clusters contained the following topics:

- Box A: Capacity building, technology transfer, implementation of Articles 4.8/4.9 and 3.14, and finance, including creating an adaptation fund.
- Box B: Kyoto flexibility mechanisms.
- Box C: Land Use, Land-use Change and Forestry.
- Box D: Policies and Measures, Compliance, Accounting, Reporting and Review.

The Note clearly showed that Parties had moved fairly close to a compromise. However, as described in Chapter 3, eventually the Parties did not reach agreement on the extent to which industrialised Parties could account for carbon sequestration through LULUCF activities (*e.g.*, through different harvesting techniques on land so that less carbon would be released from soils) in their GHG emission reduction bookkeeping (Earth Negotiations Bulletin, 2000a, p. 17). Consequently, COP-6 had to be

[80] As explained above, more technical issues, such as baseline determination, additionality, leakage, *etc*. were not considered as issues to be *crunched* at COP-6. These would become part of the discussions at COP-7 in 2001.
[81] The 13th sessions of SB had started in Lyon (September 2000) and were resumed in The Hague during the first week of COP-6 (SB-13 closed on Saturday 18 November 2000).

suspended to June 2001. Below follows a description of the negotiations on design issues related to JI and CDM as discussed within the negotiation process under the Note by the President.

5.3.1. Box A: Adaptation Fund in relation to CDM

In The Hague, within the context of Box A, Parties extensively discussed the issue of creating an adaptation fund in order to support developing countries which are particularly vulnerable for the adverse effects of climate change. Article 12.8 of the Kyoto Protocol had stated that a share of the proceeds from CDM projects should be collected in such a fund, although it was unclear which share (UNFCCC, 1998). COP-6 agreed that the Adaptation Fund would be established under the GEF as a trust fund and that funding would be generated through a levy ('share of proceeds') of 2% on the Certified Emission Reductions (CERs) generated by CDM projects. The Fund would assist least developed countries and small island developing states in avoiding deforestation, combating land degradation, and avoiding desertification. In Box A it was furthermore proposed that, in order to encourage a greater flow of CDM projects to least developed countries, CDM projects implemented in these countries would be exempted from the levy on CERs.

5.3.2. Box B: Kyoto flexibility mechanisms issues

On the eligibility of projects under the CDM, the COP proposed that each non-Annex I Party hosting a CDM project should have the discretion to evaluate itself whether a project contributes to its sustainable development. Nevertheless, COP-6 proposed that Annex I and non-Annex I Parties should refrain from using nuclear energy under the CDM (Earth Negotiations Bulletin, 2000a, p. 12). Although COP-6 did not agree on the positive list proposal of the EU, it proposed that renewable energy (*e.g.*, small-scale hydro) and energy efficiency improvement projects should be given priority under the CDM.

Regarding the issue of supplementarity, the Note by the President suggested that Annex I Parties carry out their commitments *primarily* through domestic action (Pronk, 2000). Although the choice of the word 'primarily' implied an important role for domestic action in meeting commitments, COP-6 did not further specify this. Partly, this may have been due to the fact that the final stage of the negotiations began rather late[82] so that there may not have been enough time to bring supporters and opponents of limiting the use of the Kyoto flexibility mechanisms together. However, during the second week of COP-6, the EU had expressed interest in a possible *qualitative* ceiling instead of a quantitative formula, provided that other technical issues related to the application of the mechanisms (*e.g.*, 'hot air', baseline determination, eligibility of sinks under the CDM) would eventually be satisfactorily resolved.[83]

At COP-6, Parties proposed a two-track project cycle for JI, which reflected the agreement reached between, among others, the EU, the Umbrella Group and CG-11 at SB-13 in Lyon (see above).

[82] In fact, the final negotiation stage began only on Thursday evening (23 November 2000) as some Parties had requested the COP President earlier that week for some extra time in order to be able to come to an agreement in the informal sub-groups.

[83] Based on a report from Environment Minister Yuriko Kawaguchi from Japan who co-facilitated the informal sub-group discussion on the Kyoto flexibility mechanisms (Earth Negotiations Bulletin, 2000a, p. 12).

According to the proposal, those JI host Parties with a proper national inventory system for GHG emissions, would be eligible for a fast-track JI procedure (JI Track-1). However, a problem with the JI two-track approach could be that such an inventory system was only required about a year before the commitment period.[84] This could, given the preparation time usually required for JI projects, create a disincentive for early JI action (especially if crediting of such projects would only start as of 2008). In other words, countries interested in JI investments and acquiring ERUs as of 2008 would need to start with the project preparations around 2006 but may not have clarity by then whether the host country would be eligible for the fast-track procedure. The COP-6 Decision on the JI two-track approach was eventually adopted by COP-7 in 2001 and the detailed criteria for Annex I Parties to be eligible for fast-track JI are shown in Box 5-2 (UNFCCC, 2002b, pp. 2-4, Decision 16/CP.7).

These compromises reflected the following tactical aspects, including how Parties formulated positions and managed to keep these positions alive during the negotiations or combined these with other positions:

- Supplementarity: The EU's argument to cap the overall use of the Kyoto flexibility mechanisms largely originated from a concern within the EU that a too large use of the mechanisms would slow down the development, deployment and diffusion of low-emission technologies within Annex I Parties. With a view to the medium to long run, the EU considered such a development a threat to the environmental integrity of the Kyoto Protocol. Other Annex I Parties, instead, wanted a more flexible approach as they feared that capping the use of the Kyoto flexibility mechanisms would lead to several missed opportunities in terms of transferring present state-of-the-art technologies to developing countries, where such technologies are not yet feasible or available. Already at COP-6, but especially at COP-6*bis* (in June 2001, when the negotiation power of some Umbrella Group countries had significantly become stronger, see Chapter 3), the EU gave up on its proposal for a quantitative ceiling and agreed on a qualitative ceiling, which Parties did not specifically define, so that it basically resembled the original Umbrella Group proposal.
- JI two-track approach: On this topic, environmental integrity concerns were addressed by negotiation Parties as the JI slow-track would apply similar rules as for the CDM and the fast-track JI process could only be used if JI host countries had their GHG inventory systems in place. What remained was G-77&China group reservations that the fast-track process might give JI a competitive edge over the CDM, but this aspect turned out to be of insufficient importance to change the course of the negotiations.
- CDM project eligibility: During the negotiations on CDM project eligibility, the EU proposals to limit possible CDM projects through a 'positive list' was not adopted, which resulted in a broader scope for CDM project investment with varying contributions to sustainable development. The compromise was clearly found in the decision to 'refrain from nuclear energy' under the CDM, whereas the eligibility of forestry projects was already covered by Box C negotiations (see below). Many countries were concerned about the appearance of nuclear energy projects in the CDM discussions (JIN, 2000a) (in 1999 there were rumours that South Africa and Canada were preparing a nuclear energy CDM project) and this compromise satisfactorily settled the issue. The scope for large-scale hydro power projects, of which the environmental integrity next to GHG emission reduction was also questioned during negotiations, was reduced under the CDM by

[84] See Article 7.1 of the Kyoto Protocol (UNFCCC, 1998).

referring to the criteria of the World Commission on Dams (World Commission on Dams, 2000), which needed to be met anyway and which covered most of the concerns about large-scale hydro power projects expressed during negotiations on the CDM.

Box 5-2. JI two-track approach

For JI, the proposed two-track approach developed at SB-13 (Lyon, September 2000) was included in the Decision of COP-7. Paragraph 21 of the 'Guidelines for the implementation of Article 6 of the Kyoto Protocol' (UNFCCC, 2002b, pp. 2-4, Decision 16/CP.7) states that an Annex I Party which meets the following eligibility criteria:

- it must be a Party to the Protocol;
- its assigned amount has been calculated and recorded in accordance with the Marrakech decision on modalities for the accounting of assigned amounts;
- it has in place a national system for the estimation of anthropogenic GHG emissions in accordance with Article 5.1 of the Protocol;
- it has in place a national registry in accordance with Article 7.4 of the Protocol;
- it has submitted annually the most recent required inventory, in accordance with Articles 5.2 and 7.1 [of the Kyoto Protocol]; and
- it submits supplementary information on assigned amount in accordance with Article 7.1;

may "verify reductions in anthropogenic emissions by sources or enhancements of anthropogenic removals by sinks from an Article 6 project as being additional to any that would otherwise occur … Upon such verification, the host Party may issue the appropriate quantity of emission reduction units in accordance with the relevant provisions of decision -/CMP.1" (UNFCCC, 2002b, pp. 13, para. 23).

This provision is generally referred to as the JI Track-1 (fast track) procedure, which implies that when both Parties meet the above eligibility requirements, they can transfer and acquire emission reduction units (ERUs) from JI projects without the approval of the JI supervisory committee, *i.e.* without an external validation of the project plan and verification of the emission reductions by a designated operational entity.

The verification of emission reductions of JI projects that are implemented by Parties which do not meet the eligibility requirements of the above paragraph 23, shall occur through the verification procedure under the JI Supervisory Committee. This procedure is called JI Track-2 (slow track) and it was generally expected that this procedure would largely resemble the CDM project design procedures.

5.3.3. Box C: Eligibility of land use, land-use change and forestry projects in the CDM

Finally, COP-6 reached a tentative agreement on the eligibility of afforestation and reforestation projects under the CDM. Nevertheless, Parties acknowledged the special concerns related to forestry projects, such as the issues of possible non-permanence of the carbon sequestration, possible adverse social and environmental effects, and replacement of deforestation activities ('carbon leakage') (Earth Negotiations Bulletin, 2001, pp. 6-7) (JIN, 2001a, p. 4). Projects preventing deforestation and land degradation would, according to the agreement, not be eligible under the CDM; as mentioned above, these project types are considered priority activities to be funded by the Adaptation Fund. Several

observers concluded that including forestry and land conservation projects in the Adaptation Fund would partly compensate those developing countries for which preventing deforestation and land degradation are important sustainable development priorities (JIN, 2000d).

The compromise thus reached clearly limited the scope for forestry projects under the CDM. After all, from the statement on LULUCF submitted by the Latin American countries, it became clear that especially forest conservation and management projects were considered very important for the maintenance of their domestic forest areas (JIN, 2000c, p. 9) (Earth Negotiations Bulletin, 2000c, p. 2). One reason why forest conservation was left out of the CDM as a project option was the complexity of determining baselines. Whereas the baseline for reforestation and/or afforestation projects can reasonably be based on the assumption that no forest activities on the areas concerned would have taken place under business-as-usual, the baseline for projects managing an existing forest must reasonably demonstrate that without the CDM the forest would have been deforested, which is generally more difficult to prove. Therefore, the compromise, on the one hand, increased environmental integrity by leaving out of the CDM several possibly controversial forest conservation projects, but, on the other hand, offered considerably less support to Latin American countries' domestic forestry programmes.

5.4. Handling Issues Related to the Design of the Kyoto Project Mechanisms

5.4.1. Introduction

After the successful conclusion of the Buenos Aires Plan of Action at the resumed session of COP-6 in Bonn (June 2001), negotiations continued at COP-7 (Marrakech, Morocco, October-November 2001). At Marrakech, Parties formulate a package of draft decisions (the so-called 'Marrakech Accords')[85] on the operationalisation of the several policy elements in the 'Bonn Agreement' (see Chapter 3), including modalities and procedures for JI and CDM projects (UNFCCC, 2002b). The latter referred to the several steps in setting up JI and CDM projects and calculating the GHG emission reductions achieved.

Table 5-1 presents an overview of the issues/steps addressed by the Marrakech Accords with respect to designing a CDM project, monitoring its implementation, and calculating the GHG emission reductions achieved.[86] Key elements in the design phase of a CDM project are:

- Additionality: determination that GHG emission reductions would not have taken place in the absence of the CDM activity;
- Baseline: estimation of GHG emissions under business-as-usual circumstances of the CDM project;

[85] The *Marrakech Accords* contained draft decisions because formally the COP-MOP (the official negotiation body for the Kyoto Protocol) would have to endorse these guidelines, modalities, and procedures. However, since, by the time of COP-7, the Kyoto Protocol had not yet entered into force, no session of the COP-MOP could be held.

[86] This section largely focuses on the CDM since the modalities and procedures for JI Track-1 projects are largely determined by JI host and investor Parties themselves on a bilateral basis; JI Track-2 procedures resembled those of the CDM.

- Project boundary: specification of GHG emission sources covered by the project; and
- Monitoring and verification: check the performance of a project and verify whether GHG emission reductions have been achieved.

In practice, the project design stage also contains negotiations between investor and host country partners on the investment terms and sharing of the project revenues, but as this aspect is typically left to the countries and/or project participants and does not have an impact on the calculation of emission reductions, it has not been dealt with in the Marrakech Accords. Once the CDM project design has been completed, it needs to be validated by an independent, third party entity. The CDM Executive Board (and JI Supervisory Committee) designates operational entities (DOE) for this task. Projects with validated project design documents can subsequently be registered as official CDM projects.

During the implementation phase of the project, the actual investment takes place. The project's emission reductions are subsequently calculated by taking the difference between the baseline emissions and the actually monitored emissions of the project itself. For CDM projects, these reductions must be verified by a DOE before they can be officially certified and issued as CERs to the CDM investor countries.

The detailed elaboration in the Marrakech Accords on project design and implementation issues was directly related to the issue that JI and CDM had an inherent problem that GHG emission reductions had to be calculated against a counterfactual baseline scenario (*i.e.* a scenario that is replaced by the project and will therefore not become reality). This implied that emissions reduction calculations were surrounded by baseline uncertainties and could be subject to gaming by project developers in order to claim more emission reduction credits. In order to deal with this problem, the negotiations at the COP, SBSTA and at the level of the CDM Executive Board focussed on how to handle baseline uncertainties, develop strict rules to prevent abuse of these uncertainties, while at the same time trying to avoid that too strict rules would discourage project investments.

The negotiation process and tactical aspects concerning baselines and additionality of emission reductions are explained in the next section. Below, a number of other design issues that were addressed during negotiations on the design of the CDM (and JI) are explained.

Table 5-1. CDM modalities and procedures dealt with by the Marrakech Accords

Issue	Addressed in 'Marrakech' Project design document
Additionality	Emission reductions shall be additional to what would otherwise occur
Project boundaries	All anthropogenic GHG emissions under the control of the project participants that are significant and reasonably attributable to the project
Baselines	• Reasonable representation of emissions in absence of the project • Project-specific and/or using multi-project factors • Take into account relevant national/sectoral policies and circumstances • Take into account project activity level • Simplified procedures for small-scale projects
Leakage	Measurable changes in emissions outside project boundary attributable to project
Crediting lifetime	For CDM projects either three possible periods of 7 years with 2 revision moments, or one period of 10 years only
Equivalence of service	• The activity level for the baseline should be the same as the activity level of the actual project • Emission reductions because of decreases in activity levels due to force majeure cannot be credited
Validation of project design	• To be carried out by operational entities • Includes validation of the baseline and of the monitoring plan
Monitoring of project	• Monitoring of project emissions • Environmental assessment
Verification and certification	Designated operational entities
Issuing of credits	No *ex-ante* crediting; issuance after reductions have been verified at intervals to be agreed

Source: UNFCCC, 2002b, pp. 43-45

5.4.2. JI and CDM project system boundaries

Before estimating a JI or CDM project baseline scenario, it must first be assessed which emission sources to include in the baseline. Basically, this should be any emission source that is affected by the project. However, a complication of this approach is that projects may have an impact on emission sources that are beyond the management control of the project developers. Therefore, according to 'Marrakech', the project boundary must encompass all anthropogenic GHG emission sources which are under the control of the project participant(s) (UNFCCC, 2002b, pp. 37, para. 52).

In this definition the key term is *control*. One way of dealing with the control issue for projects is to analyse to what extent the project is considered to be (in)dependent of any supply system in terms of their operation. Following this approach, a JI or CDM project can directly substitute an existing plant or a planned investment, *e.g.*, a planned development of a conventional coal-fired power plant is changed to a higher-efficiency power plant. Also, an off-grid energy efficiency project in a rural area in a developing country can reasonably be assumed to be independent of the grid-connected energy system. For such a project, the project area would be the project boundary.

5.4.3. Leakage of GHG emission reduction effects

Next to the impact of the project on emission sources within its boundary, the project may, as mentioned above, also have knock-on effects on GHG emission sources outside its boundary, which cannot be controlled by the project developers. These knock-on effects can be both positive and negative. A positive effect, *e.g.*, a CDM emission reduction project leads to extra emission reductions outside the system boundary, is often referred to as *spreading* or *spill over* (Jackson, et al., 2001). When an emission reduction on the project site is (partly) offset by an increase in emissions outside the project boundary, *carbon leakage* occurs. In both cases, the project's system boundary does not capture all direct and indirect effects of the project (OECD/IEA, 1999) (JIN, 2000e).

The chapter in the Marrakech Accords dealing with CDM modalities and procedures defines leakage as "[t]he net change of anthropogenic emissions … which occurs outside the project boundary, and which is measurable and attributable to the … project activity" (UNFCCC, 2002b, pp. 37, para. 51). In this text, there is also a requirement for "the identification of all potential sources of, and collection and archiving of data on emissions by sources outside the project boundaries which are significant and reasonably attributable to the project during the crediting period" (UNFCCC, 2002b, pp. 38, para. 53c). Furthermore, the CDM text requires "a description of the formulae used to calculate project leakage" (as part of the baseline emissions) (UNFCCC, 2002b, pp. 43-45, Appendix B, para. 2(i)(v)). The Marrakech Accords text is not really consistent in this respect, as it clearly defines the project boundary as the system for which the baseline must be determined and the leakage as changes in emissions due to the project but outside the project boundary. Nevertheless, project developers are required to present "a description of how the baseline methodology addresses potential leakage" (UNFCCC, 2002b, pp. 43-45, Appendix B, para. 2(b)(ii)).

The issue of leakage could be dealt with in a number of approaches.[87] First, leakage could be estimated in a similar way as is done with emission reductions within the project boundary, *i.e.* the leakage is calculated as the increase in emissions outside the project boundary beyond the emissions that were estimated to have occurred in the absence of the project. Hence, this assessment of leakage repeats the additionality/baseline exercises for emission sources within the project boundary. Second, leakage could be dealt with by defining standardised leakage correction factors (Chomitz, 1999), which provide a general estimate of leakage for a particular project type in a host country that can be applied to multiple projects. For each project of this type, the emission reductions achieved within the project boundary are reduced with the leakage correction factor (or increased with a correction factor for spreading). Determining a standardised leakage factor implies that the system boundaries for projects of a particular type in a host country can be assumed to be more or less of the same size. Though simple and cheap, the problem with the correction factor is to determine at what level it should be set. It could be conceived as being applied at the project type level as one project type may be more prone to leakage than another or it could be related to project size.

[87] In the remainder of this discussion the term 'leakage' is used, although the arguments hold in most cases for both leakage and spreading. Where they do not hold for both effects, this is specifically mentioned.

5.4.4. Crediting lifetime

In theory, the crediting lifetime of a JI or CDM project, *i.e.* the period of time during which the project can deliver GHG emission reduction credits, may be:

- the technical lifetime of the technology implemented under the project, or
- the period of time during which the project is considered additional to what would otherwise have taken place in the absence of the project, *e.g.*, if it can be expected that five years after the project's start a similar technology would have been implemented anyway, the crediting lifetime would be limited to five years only.

The Marrakech Accords standardised the crediting lifetime for CDM projects to either 10 years with no possibility of renewal, or to 3 periods of 7 years with a possibility of renewal after each 7-year period. In case of the latter approach, project participants must renew or update the baseline for their project after each period of 7 years "taking into account new data where applicable" (UNFCCC, 2002b, pp. 37, para. 49a). Should in the meantime, during the first 7-year period, a change have occurred which is relevant for the project, this will not affect the baseline for the first period; it should be included in the baseline for the second period though. A DOE must validate the new or updated baseline again.

5.4.5. Equivalence of service

Following convention, in order to calculate the GHG emission reduction of a project, the baseline should provide the same 'service', *e.g.*, in terms of energy output or land area. This concept is known as 'equivalence of service' (Jackson, et al., 2001). In practice, such equivalence may be difficult to ensure if, for example, a power plant in a project has a different output capacity than the one assumed under the baseline. Differences in efficiency, reliability, or fuel price between the project and the baseline may all cause plants to respond differently to the same demand.

Moreover, it may be the case that equivalence of service can never apply. For example, a lighting project using solar photovoltaic panels and compact fluorescent light bulbs to replace kerosene lamps will provide 20 times the lighting service at $1/25^{th}$ of the energy input. Clearly, the concept is meaningless in this case. Projects that do not meet the equivalence of service condition cannot be compared on an activity basis, *e.g.*, $ktCO_2$/MWh. Other approaches may need to be taken, such as $ktCO_2$/capita/year (Jackson, et al., 2001) (Begg, et al., 2002a) (PROBASE, 2003). Hence it is important to consider carefully whether this concept should apply and how it might be practically applied.

5.5. The Process of Negotiating Modalities for Determining Baselines and Additionality

The decisions on the JI and CDM project cycle issues included in the Marrakech Accords were the result of the work carried out by the working groups on JI and the CDM at the SB-sessions during 1998-2000 and at the COP. Most of these decisions were mainly definitions of the steps to be taken

when designing and implementing JI and CDM projects. As is explained below, the translation of the 'Marrakech' definitions to actual practice left scope for negotiations at a more informal level, *i.e.* where project developers submit project design documents based on their interpretation of the Marrakech Accords to the DOEs and where the CDM Executive Board decides on whether they agree with this interpretation.

In the context of the CDM, this opened an entirely new dynamic process in which the CDM Executive Board, project developers, DOEs, review experts, and the Panel for Methodological Issues (MethPanel, operating under supervision of the CDM Executive Board) all tried to operationalise the 'Marrakech' definitions, with different interests. The most profound example of how this dynamic process has taken place in the context of the CDM is the interpretation of the Marrakech rules on baseline determination and additionality assessment. This process is described below.

5.5.1. The process of negotiating modalities for baseline determination

The Marrakech Accords defined the baseline for JI and CDM projects as the scenario that reasonably represents the anthropogenic emissions by GHG sources that would occur in the absence of the JI or CDM project (UNFCCC, 2002b, pp. 18, Appendix B, para. 1) (UNFCCC, 2002b, pp. 36, Annex, para. 44). In this decision the term 'reasonably' is of crucial importance. As explained above, because of its hypothetical character (*i.e.* the baseline scenario will not take place due to the project), the baseline is surrounded with uncertainties regarding the choice of the 'right' methodology, parameters, key factors, *etc*. As a consequence, more than one baseline could be considered reasonable. It should be noted that the modalities and procedures for setting CDM project baselines in the Marrakech Accords text are much more detailed than for JI project baselines, which relates to the fact that for JI a two-track approach is envisaged (see Section 5.3).

For the determination of CDM project baselines, the Marrakech Accords listed three approaches from which project participants must select the one which they consider most appropriate for the project activity (UNFCCC, 2002b, pp. 37, Annex, para. 48):

1. Historical GHG emissions baseline: In the first approach the baseline is derived from actual or historical emissions relevant for the project. This approach assumes that the (recent) historic and actual emissions of GHGs at the project site (*i.e.* within the project's system boundary) form a good representation of what reasonably would have happened in absence of the project during its crediting lifetime.
2. Economically attractive course of action baseline: The second approach determines a baseline by identifying a technology that represents "an economically attractive course of action, taking into account barriers to investment" (UNFCCC, 2002b, pp. 37, Annex, para. 48b). This approach assumes that, under business-as-usual circumstances, an economically attractive course of action would have occurred, although it does not specify economic attractiveness as a concept, which could imply that several different economically attractive options would qualify as a baseline, ranging from the economically most attractive course of action to less attractive ones. The choice of the baseline in this approach is to a certain extent narrowed down by the condition that under business-as-usual an economically attractive course of action would not have been hampered by

investment barriers. There could be an overlap between this approach and the first one if actually existing technologies represent an economically attractive course of action.

3. Benchmark-type of baselines: The third approach differs from the first two in that it actually describes a multi-project baseline application, whereas the first two approaches can both be applied for single-project and multi-project baselines. It specifies that the baseline or benchmark is to be derived from the "average emissions of similar projects undertaken in the previous five years, in similar … circumstances, and whose performance is among the top 20 percent of their category" (UNFCCC, 2002b, pp. 37, Annex, para. 48c). In this approach, actually two samples are taken. First, the average GHG emissions of all investments in a particular project category undertaken during the last five years are considered. Second, out of all currently operational plants within the project category the top 20% is taken, *i.e.* technologies with the lowest GHG intensity. Subsequently, the baseline is determined by taking the average emissions of those plants that belong to the top 20% in their category and that have become operational during the previous five years.

Although the third baseline approach mentioned in the Marrakech Accords resembled a multi-project baseline approach, it was specifically stated in the text on the CDM that baselines shall be established on a project-specific basis (UNFCCC, 2002b, pp. 36, Annex, para. 45c). At first sight, this seemed to rule out the possibility of determining baselines by using multi-project approaches, but a closer look at the Appendices of the Marrakech Accords showed that multi-project baselines are allowed too, provided that such standardisation would lead to reasonable and conservative estimates of the emissions within the project's system boundary in absence of the project (UNFCCC, 2002b, pp. 46, Appendix C, para. (b)(v)).

Multi-project (or standardised) baselines are generic baselines derived for application to multiple projects and which contain reasonable descriptions of the future development of a sector (*e.g.*, electricity grid) or country. For example, if for the power sector in a host country it can be reasonably assumed that under business-as-usual circumstances the power plants had used gas-fired boilers then this would be the technical performance on which to base the benchmark. The level of aggregation of these multi-project baselines depends on the project situation, but this could vary from aggregating the project technology/fuel situation to the sector level and perhaps to the country level. Most technology-based performance standards are country-specific, but some may even apply across multiple countries. The discussion on baselines and the application of multi-project baselines is continued in the Chapter 6.

5.5.2. The process of negotiating modalities for determining additionality of GHG emission reductions

A general requirement of a JI or CDM project is that it must result in additional emission reductions, as these reductions are used as credits to compensate for GHG emissions in Annex I countries. Probably because of that, the debate on additionality was very harsh during negotiations, at the level of the COP and the SB, but also at the more technical level of the CDM Executive Board, project

developers, DOEs and other stakeholders (irrespective of whether they were really involved in projects and government programmes or delivered public comments on project proposals).[88]

The essence of the concept of additionality is closely related to the issue of determining a project baseline, as described above, in the sense that GHG emission reductions are additional when a CDM/JI project's emissions are lower than the emissions estimated in the baseline scenario. This rather straightforward case can for instance be applied to situations where it can be clearly identified what the project replaces, *e.g.*, a coal-fired plant being replaced with a gas-fired boiler.

This picture changes if baselines are determined using standardised, multi-project baseline emission factors (for a particular project type in a host country or region, as explained above and elaborated on in the next chapter). Multi-project baselines use aggregate emission factors, which could, for instance, be a national average emissions factor, an average emission factor of all or a selection of grid-connected power generation capacity, or a factor based on the best available techniques.

An important difference with a project-specific baseline is that multi-project baselines are not directly related to the projects. In other words, all projects in a particular category (can) use the same multi-project baseline. As a consequence, each project with lower emissions than the multi-project baseline could generate credits, irrespective of whether it would have been implemented with or without the CDM. Although application of multi-project baselines was generally supported because of its potential to lower transaction costs, many observers argued that multi-project baselines could also provide considerable scope for free riding, *i.e.* non-additional projects also receiving CDM credits (PROBASE, 2003, p. 12) (Ellis, et al., 2001) (Bode & Michaelowa, 2001) (Michaelowa & Stronzik, 2002).

In this context, from a methodological point of view, it was suggested by some to filter these free riders from the CDM crediting process through a project-specific additionality test (Bode & Michaelowa, 2001) (PROBASE, 2003, pp. 12, 21). Such a test could, for instance, contain an investment barriers analysis or contain threshold values for investment criteria, such as internal rate of return values, net present values, cost levels, *etc*. (PROBASE, 2003, pp. 109-110) (Sathaye, et al., 2001). Views on the functionality of such a project-specific additionality test have differed strongly (Jepma, 2002) (JIN, 2003b). As the EU-funded research programme PROBASE (2003) put forward, carrying out additionality tests would involve extra transaction costs and partly neutralise the transaction cost gains from using standardised baselines (PROBASE, 2003, pp. 21-22).

In addition, there have been serious doubts in the literature about the extent to which free riders can be distinguished from genuine CDM investors. For some projects, *e.g.*, landfill-gas CDM projects, the difference in return on investment between the project with the CDM credits and without credits may be sufficiently large to conclude that without the CDM such a project would not have come off the ground. For many other projects, however, where the CDM component only covers about 10% of the project funding, the internal rates of returns between the CDM and without-CDM cases are rather small (2 or 3%-points), which makes it difficult to conclude that the project is additional or not. Moreover, realising that a lower rate of return in the without-CDM case (the baseline) would make the

[88] It is noted that during 2001-2005, this debate primarily took place in the context of the CDM. Therefore, below only the CDM is referred to.

project officially additional could be an incentive for project developers to 'talk up or talk down' the figures in order to stay below additionality threshold figures (Jepma, 2002).

Other ways to deal with free riding, as proposed by the literature, are setting conservative multi-project baselines. This may not stop all free riders, but at least discourage most of them. The disadvantage of this approach, however, is that it would also discourage 'genuine' CDM project developers, because a conservative baseline would reduce the amount of credits to be achieved. Therefore, setting conservative multi-project baseline could lead to missed CDM opportunities (PROBASE, 2003, p. 49).

These options for handling the concept of additionality had been discussed preceding COP-7. For the CDM, there were two proposed options (Earth Negotiations Bulletin, 2001, p. 6).[89] According to the first option, a project must be 'environmentally additional' (*i.e*. produce reductions below a baseline) and show additionality by proving that the project's internal rate of return is lower than a threshold level for the host country to be determined by the CDM-EB. The second option in the pre-COP-7 negotiating text proposed the use of performance standards: the project must perform better, in terms of emission reductions, than an average performance of current activities in either the investor or host country.

The final text of COP-7, however, did not contain modalities for carrying out a project-specific additionality test, *i.e*. the 'Marrakech Accords' require emission reductions to be additional to what otherwise would have taken place, but rather than through testing whether the project is additional, the additionality was assessed as part of the baseline study for a CDM project (see Table 1 and Box 3). In other words, given that a CDM project baseline must describe what would reasonably have taken place in the absence of the project activity (UNFCCC, 2002b, pp. 36, Annex, para. 44), additionality is shown if the baseline emissions are higher than the estimated project emissions.

Therefore, the clearest message from COP-7 seemed to be that the investment criterion threshold was left out of the Marrakech Accords text, so that it seemed that that particular option had disappeared from the CDM project cycle. Several negotiators considered using an investment criterion threshold problematic, among other reasons because:

- The transparency of an investment criterion threshold may not be high when confidential financial data are required but not disclosed,
- The data could relatively easily be manipulated in order to arrive at a quantified figure which meets the threshold level (see also above), and
- An investment additionality threshold value does not necessarily reveal several other factors that play a role in investment decisions (*e.g*., legal and institutional barriers, availability of human capital in the host country, capital market inefficiencies in the host countries).

However, project-specific additionality was not entirely removed from the 'Marrakech' text (UNFCCC, 2002b, pp. 20-49). In fact, as Box 5-3 shows, the treatment of additionality in the Marrakech Accords was not entirely consistent. For instance, whereas paragraph 43 clearly refers to additionality in terms of emissions reduced below the baseline, paragraph 2.d of Appendix B to this draft decision, requires project developers in their project design documents to show *how* GHG

[89] For JI, additionality has been included as a project modality in the second track procedure, but as such does not differ significantly from the CDM project modalities.

emissions are reduced below the baseline. This latter paragraph could be interpreted as a project-specific additionality test since it requires more information than simply the fact that the project emissions are below the baseline. Finally, the Marrakech Accords requested the CDM-EB to specifically address the additionality requirement. By doing so, the COP-7 basically left it to the CDM-EB to decide on how to operationalise additionality, either through baseline assessments, or project-specific additionality tests.

Box 5-3. Additionality in the Marrakech Text on the CDM (UNFCCC, 2002b, pp. 20-49)

Para. 37d Annex on CDM modalities and procedures:
"The project is expected to result in a reduction in … greenhouse gases that are *additional* to any that would occur in the absence of the proposed project activity…"

Para. 43 Annex on CDM modalities and procedures:
"A CDM project activity is additional if…emissions…are reduced below those that would have occurred in absence of the …project."
Comment: The phrase "those that ... project" refers to the baseline, which implies that additionality is shown if the emissions of the project are below the baseline.

Para. 45b Annex on CDM modalities and procedures:
"[A baseline shall be established] in a transparent and conservative manner regarding the choice of approaches, assumptions… additionality…"
Comment: This paragraph clearly includes additionality as a parameter for baseline determination.

Para 2.d, Appendix B – project design document:
"[the project design document shall include a] Description of how the...emissions…are reduced below those that would have occurred in absence of… the project activity"
Comment: This requirement was included in the Project Design Document on 29 August 2002 and requests project developers to explain how and why a project is additional. Given the above paragraphs 37d, 43 and 45b, this implies that project developers need to explain why the baseline for their project is above the project's emissions level (e.g., by identifying barriers to business-as-usual implementation or by identifying which key factors or parameters have caused the baseline to differ from the project's emissions scenario).

Para. a(v), Appendix C – baseline guidance:
"[the Executive Board shall develop and recommend general guidance in order to] address the additionality requirement of Article 12.5.c and paragraph. 43 of the above Annex."

5.6. Process and Tactical Aspects Related to Operationalising Baselines and Additionality in the CDM practice

Soon after the entry-into-force of the Kyoto Protocol in February 2005, the CDM pipeline started to grow very quickly. For instance, within two years, the CDM pipeline consisted of 2551 registered project activities, which together were estimated to reduce over 2.2 billion GHG emissions up until

2012 (by the end of the first Kyoto Protocol commitment period) (ENTTRANS, 2008, p. 18).[90] From this CDM practice, it could among others be concluded that many projects in the pipeline were so-called 'greenfield' electricity production projects. These projects do not replace clearly defined existing plants or systems, but replace power production capacity connected to the power grid in the CDM host country. These projects are often based on application of renewable energy technologies, such as wind farms, hydro power plants and concentrated solar plants. In October 2007, the share of these projects in the overall pipeline was approximately 40%, (ENTTRANS, 2008, p. 21) while in 2013 this share had grown to over 55% (out of 7366 registered projects) (Fenhann & Antonsen, 2013). In order to determine which capacity will be replaced by the project, the baseline study must identify which grid-connected capacity would be dispatched first when new capacity becomes available and/or which capacity would have been added to the grid in the absence of the CDM project. As in most cases, it is difficult to specify such a marginal capacity (after all, the decision which capacity to dispatch or to replace is beyond the control of the CDM project developers who only sign a power purchase agreement with the power grid owner/operator), a baseline for a 'greenfield' project is in most cases determined with the help of an analysis to estimate which capacity connected or planned to be connected to the grid will be replaced by the CDM project, based on technology lifetime, operational costs, fuel availability, *etc*.

As these baseline calculations are based on an analysis of the entire grid, they strongly resemble the methodologies for multi-project, standardised baselines. Consequently, this placed the issue of additionality back in the spotlights. After all, similar to the theoretical case of multi-project baselines described above, each project with GHG emissions below the aggregate grid-based baseline level could apply for CDM credits, irrespective of whether the project developers would have carried out the activity anyhow. As the COP, in the Marrakech Accords, had not settled this topic and had even given some confusing signals on the interpretation of additionality (see above), it was up to the early CDM movers and the CDM Executive Board to operationalise the issue.

The most active early movers on the new CDM market were the World Bank's Prototype Carbon Fund initiative (PCF) of 2000 and the Netherlands Government with its CDM tender programme CERUPT (Certified Emission Reduction Units Procurement Tender) which was launched in 2001 (JIN, 2001b) (JIN, 2001c). As early movers, PCF and CERUPT had to interpret the Kyoto Protocol Article 12 themselves, without clear guidance from the Marrakech Accords. Regarding baselines and additionality, PCF and CERUPT used different approaches. Although PCF initially (*i.e*. in 2000) did not request project developers to carry out separate additionality tests, it later required project developers to specifically show why the project scenario itself could not constitute the baseline, which implies an explicit assessment of additionality of the project.[91] In the CERUPT programme a separate additionality test was not required; project developers submitting project proposals to the Netherlands Government had to carry out a detailed baseline analysis (with both the project-specific and the country context described), while showing that they had used the best available information (Ministry

[90] State of play of CDM market per October 2007; projects that have been officially registered as CDM activities by the CDM EB or that are in the process of validation by a designated operation entity.

[91] Next to showing why the project itself is not part of the baseline, the PCF project developers must also submit financial reports on the project. The latter, however, was to make sure that only those projects are supported that are sufficiently financially viable to remain operational after the project's crediting lifetime has ended.

of Economic Affairs of the Netherlands, 2001). In this approach, it was assumed that the resulting baselines would implicitly reveal the projects' additionality.

As explained in Section 5.5.2, the CDM Executive Board formally had to provide guidance to the interpretation of the 'Marrakech Accords' in practice. The CDM Executive Board meets about five times a year during which it carries out several tasks: from the accreditation of the DOEs to the approval of baseline and monitoring methodologies (UNFCCC, 2002b, pp. 27, Annex, para.5). For the approval of methodologies, the board is supported by the MethPanel (an expert team to advise on each new methodology used by a CDM project developer). Methodologies approved by the CDM Executive Board can be used by other project developers as well for projects of the same type as covered by that methodology.

The first round of decisions by the CDM Executive Board on baseline methodologies took place on 7-8 June 2003 when the Board met for the ninth time. It considered fourteen new methodologies which had been compiled using the CDM Project Design Document (PDD) format which the CDM Executive Board had adopted on 29 August 2002 (Jepma, 2003) (JIN, 2003b). This document was mostly a one-to-one reflection of the modalities and procedures for the CDM in the Marrakech Accords with the exception that the requirement for an additionality assessment was explicitly formulated as a separate test next to the baseline analysis. The project developers using the PDD, however, generally had difficulties with precisely interpreting the 'why' and 'how' question in PDD Section B.4: "how and why this project is additional and therefore not the baseline scenario." This was the more so because there was no particular guidance on whether also investment data and criteria had to be used in answering this question or that the assessment could have a more qualitative nature.

The MethPanel in its recommendations to the CDM Executive Board used a rather strict interpretation of the required additionality assessment. This, in combination with the general dissatisfaction of the Panel with the baseline and monitoring methodologies submitted by project developers, made that the Panel recommended to only give an A-rank (approved) to the baseline methodology used the Ulsan HFC_{23} Decomposition project, planned to be carried out in South Korea with INEOS Fluor Japan as main investor country project participant. This recommendation was taken over by the CDM Executive Board. The other thirteen baseline and monitoring methodologies were rejected, either as a 'B'-case (rejected, but with a possibility to resubmit; 5 methodologies), or as a 'C'-case (rejected, with no possibility of resubmission; 8 methodologies). Based on the decisions by the ninth meeting of the Executive Board, several stakeholders expressed their concern that the CDM prompt start was hampered by the Board's and the MethPanel's strict assessments (JIN, 2003b).

During the process of approving methodologies by the CDM Executive Board at its ninth meeting, additionality was the most important obstacle. Ten out of the 14 methodologies were rejected by the board because they insufficiently showed how and why the project was additional to the baseline case. Whereas most of the project developers had interpreted the required additionality assessment in the PDD as *environmental additionality* (*i.e.* a project is 'automatically' considered additional if the project's GHG emissions are below baseline emission levels), the Roster of Experts,[92] the MethPanel

[92] The CDM Executive Board appoints experts who are regularly requested to comment on submitted methodologies. The MethPanel, when providing recommendations to the Board, subsequently takes their comments into consideration.

and the CDM Executive Board generally took the position that project participants must also explain *why* the project itself is additional.

Baseline methodologies that had been proposed by project developers since June 2003 had dealt with additionality in basically two approaches. First, some project developers aimed at showing additionality by calculating the increase in a project's internal rate of return if the CDM credits were taken into consideration. For some project types, as mentioned above, such as landfill gas capture activities, these two rates could strongly differ, thereby showing that the carbon credits make a considerable difference. Second, other methodologies contained a barrier test showing that without the CDM the investment would have faced prohibitive investment barriers. Examples of such investment barriers are: lack of technical expertise and adequate supply of equipment in the host country, poor utility infrastructure and lack of administrative infrastructure and legislative framework (incl. enforcement), shortage of capital, lack of financial incentives to carry out investments as envisaged under the project, risk of subsidised energy prices, low acceptance from the public, *etc*.

In order to streamline the operationalisation of the CDM additionality assessment, the CDM Executive Board, at its 16th and 17th meeting (2004), decided to adopt a 'tool for the demonstration of additionality'. In order to provide more guidance on this aspect of the PDD, the Board consolidated the additionality methods used by project developers and approved earlier by the Board into one general framework for additionality (JIN, 2004).

The consolidated additionality tool starts with the notion that the demonstration of additionality of the GHG emission reductions must be consistent with the project baseline determination. In other words, additionality and baseline determination are conceptually strongly related to each other and this must be reflected in their application in the overall project methodology. The tool contains a stepwise approach to assess whether a proposed CDM project activity would have been carried out in the absence of the CDM. These steps are explained in Box 5-4.

Box 5-4. Steps for determining the additionality of CDM project emission reductions

The CDM additionality tool consisted of the following steps (JIN, 2004):

1. Explore whether alternatives to the project activity exist in the host country. For instance, in case laws and regulations in the country require the investment envisaged under the project to be carried out anyway, it can be concluded that alternatives to the project exist.
2. Conduct a financial investment analysis, either via a simple cost analysis showing whether without the CDM credits the project would have insufficient benefits to go ahead, or, if that is not a viable option, to apply an investment comparison analysis or a benchmark analysis.
3. Identify barriers that prevent the implementation of the proposed project activity, while not preventing alternatives. Box 5-5 shows an example of how such a barrier analysis has been applied to the El Gallo CDM project in Mexico. Project developers had the freedom to conduct either a financial analysis or a barrier analysis, or do both.
4. Demonstrate that the project technology is not common practice within the host country. In this step, an analysis must be made of projects that have already been developed in the country/region and that rely on a broadly similar technology, are of a similar scale, and take place in comparable legal, policy and economic environment. As such, this common practice step was an extension of the investment/barrier analysis in steps 2 and 3 in the sense that it broadens the scope of the assessment from a project to a national/regional level.
5. Show how CDM registration will help the project to overcome the barriers identified in steps 2 and 3.

By adopting the consolidated additionality tool, the CDM Executive Board reduced uncertainty among project developers. After the first rounds of evaluating CDM baseline and monitoring methodologies, project developers who had invested considerable amounts in project development and who also interpreted the additionality assessment in the Marrakech Accords as the difference between the baseline and the project emissions, were extremely reluctant to submit new project methodology proposals to the CDM Executive Board.[93] When the Board turned out to have a stricter opinion on additionality and indeed took the liberty given to it by the Marrakech Accords in Appendix C of the decision on the CDM (see Box 5-3), many proposals for baseline methodologies were returned to project developers as insufficient. This led to a widespread frustration among project developers who, instead of hoping to be rewarded for helping a prompt start of the CDM as early movers, were suddenly confronted with extra costs (Jepma, 2003) (JIN, 2003b).

Nonetheless, as explained above, from a purely methodological perspective, there was a valid argument to include an additionality test in the project development process, since many CDM projects turned out to be 'greenfield' activities with baselines derived from average emission factors of the electricity grid to which the project became connected. However, an important tactical aspect in the negotiations on the additionality assessment and the tool development was that, on the one hand, project developers had to do more than just calculating a baseline GHG emission scenario, but, on the other hand, project developers had the freedom to choose between testing additionality by conducting

[93] For instance, the Netherlands Government decided to redo most of its approved CERUPT projects with a more elaborate assessment of additionality, which caused considerable delays in project implementation and extra transaction costs.

a project barrier analysis and showing the financial feasibility of a project with and without the CDM credits. As explained above, investors were extremely reluctant to disclose financial information about the project, which may also require disclosing financial information about comparable investments of the project investor for the purpose of comparison. The additionality tool offered project developers the possibility to avoid a financial additionality analysis and use a more qualitative analysis of possible investment barriers.

Therefore, in terms of environmental strictness, the agreed additionality tool was more flexible than the rather strict interpretation of additionality by the CDM Executive Board earlier, in June 2003, when it evaluated the first project GHG accounting methodologies. In those days, the additionality debate was largely fuelled by external experts who argued that the CDM procedures should exclude free riders (Greiner & Michaelowa, 2003) (Pearson & Loong, 2003). However, as an assessment of additionality of the project is hypothetical in itself, *i.e.* the project replaces the situation described by the assessment, free riders can never be clearly identified. Therefore, the tactical approach taken by the CDM Executive Board was to have tools and rules sufficiently strict to avoid non-additional projects on a large scale, but reasonably flexible not to discourage investors to enter the CDM market.

Box 5-5. El Gallo project barriers under business-as-usual circumstances

The El Gallo project is located on the Cutzamala River, near the town of Cutzamala de Pinzón in the state of Guerrero in Mexico (in the Southern part of the country) (Electricidad, et al., 2013). The project aimed at generating electricity using hydroelectric sources. It aimed at installing a 30 MW power plant at the already existing dam of El Gallo on the river. The dam was built between 1979 and 1998 with the objective of irrigation and electricity generation. However, by the early 2000s, it has only fulfilled the irrigation objective, because the funding required to install power generation equipment was never raised. The World Bank's Prototype Carbon Fund (PCF) subsequently contracted the project as a CDM activity.

The main barriers to project implementation under business-as-usual listed in the project design document were:

- The limited access to financing: due to the high domestic interest rates in Mexico (Mexican interest rates of approximately 29% in 1998 and 8% in 2003) in combination with the short loan terms, the project participants had to consider international loans. Although the loan conditions were generally more attractive on the international financial markets, it turned out to be difficult to attract foreign capital. An important reason for this difficulty was that possible international financiers demand power purchase agreements showing that the power produced would be bought by off-takers. Since these off-takers were generally relatively small entities, international financiers found it more difficult to evaluate the reliability and creditworthiness of these entities. This made financiers reluctant to provide funding
- Moreover, small-scale hydroelectric technology was generally considered as relatively risky by financiers, who, according to the project design document, tended to prefer investments in conventional fossil fuel technologies or large-scale, government-advanced hydro projects
- Finally, the transaction costs related to the development of a small-scale hydropower project were disproportionately high. Hence, this created another barrier to implementing the project.

With a view to these barriers, the project participants decided in 2001 to explore the value of the CO_2 emission reductions that could be achieved by the project. This value could generate an extra source of (hard currency) funding that would increase the internal rate of return of the project. Subsequently, the project was developed as a CDM project activity in the framework of the PCF. According to the project design document, the backing of the World Bank increased the creditworthiness of the investment.

By November 2014, the CDM market had developed into a pipeline of 8676 projects, of which 7572 have been registered by the CDM Executive Board as validated CDM projects. The remaining projects are still in the process of validation by a designated operational entity or have requested registration. Table 5-2 presents an overview (number of projects per project type and share in total CDM market; number of CERs per year) (Fenhann, 2014a).

Table 5-2. CDM project pipeline November 2014

Type	No of projects	%	CERs issued (x1000)	
Wind	2624	30,24%	151,913	10,10%
Hydro	2266	26,12%	194,400	0,13%
Biomass energy	786	9,06%	45,547	3,03%
Methane avoidance	717	8,26%	24,338	1,62%
Landfill gas	410	4,73%	61,733	4,10%
Energy efficiency own energy generation	399	4,60%	70,194	4,67%
Solar	422	4,86%	1,978	0,13%
Energy efficiency Industry	138	1,59%	3,033	0,20%
Fossil fuel switch	136	1,57%	52,043	3,46%
Energy efficiency supply side (power plants)	114	1,31%	4,843	0,32%
N_2O	108	1,24%	277,045	18,42%
Coal bed/mine methane	106	1,22%	37,715	2,51%
Energy efficiency Households	103	1,19%	602	0,04%
Afforestation & Reforestation	74	0,85%	10,924	0,73%
Fugitive	58	0,67%	24,599	1,64%
Energy efficiency service sector	36	0,41%	9	0,00%
Transport	32	0,37%	1,168	0,08%
Geothermal	35	0,40%	8,053	0,54%
Cement	28	0,32%	4,704	0,31%
Energy distribution	25	0,29%	1,575	0,10%
HFCs	23	0,27%	522,431	34,73%
PFCs and SF_6	18	0,21%	4,481	0,30%
Mixed renewables	10	0,12%	16	0,00%
CO_2 usage	3	0,03%	10	0,00%
Tidal	1	0,01%	746	0,05%
Agriculture	1	0,01%	0	0,00%
Total	8,676	100%	1,504,109	100%

Source: Fenhann, 2014a.

5.7. Discussion: Kyoto Flexibility Mechanism Negotiations in Light of Design, Process and Tactics Conditions

In this chapter, negotiations have been discussed at the level of defining modalities and procedures for the Kyoto flexibility mechanisms JI and CDM. The inclusion of these mechanisms in the Kyoto Protocol enabled industrialised countries to fulfil part of their commitments through GHG emission reduction measures in other countries. After 'Kyoto', the challenge remained to define clear rules for the applicability of project types/technologies under JI and CDM and for the accounting of GHG emission reductions achieved through projects. The negotiation process for these rules can be divided into two phases. The first phase covered the period from the adoption of the Buenos Plan of Action in 1998 to the Marrakech Accords in 2001 and involved a more political debate at the level of the COP. The second phase began after COP-7 and continued even after the entry-into-force of the Kyoto

Protocol in 2005. The latter phase negotiations were more technical with a focus on modalities and procedures for the operationalisation of JI and CDM in practice.

Meeting basic condition 1: design of the Kyoto flexibility mechanisms for real and additional emission reductions

Negotiations on the design of JI and CDM during 1998-2001 largely set the boundaries within which JI and CDM could be applied by Annex I Parties in their efforts to comply with their Kyoto Protocol commitments, including decisions on supplementarity, and scope for project types under JI and CDM (sinks, nuclear energy). To a large extent, these conceptual discussions were not about the concept of project-based emissions trading as such, but were mainly related to the larger Kyoto Protocol context and particularly to the question of how much flexibility industrialised country Parties could obtain when complying with their QELRCs. For instance, a discussion on supplementarity (within the Kyoto flexibility mechanisms' context) was largely about which share of QELRCs should be implemented domestically by industrialised countries and which part could be done abroad through JI and CDM. Similarly, the debate on whether and to what extent to consider forestry projects and nuclear energy under JI and CDM was more about the overall compliance issue and desirability of some technologies under the Kyoto Protocol than about the conceptual basics of JI and CDM.

Typical conceptual JI and CDM issues during the 1998-2001 negotiation phase were: how to determine whether CDM projects contribute to sustainable development in host countries, and how to enable JI project investors and hosts to invest early in projects (*i.e*. before the start of the first Kyoto protocol commitment period). The first issue was resolved in the negotiations by agreeing that developing countries as CDM host countries will have the prerogative to decide for themselves on whether a proposed project is in line with their domestic sustainable development priorities. The second issue was addressed by acknowledging that JI credits, unlike CDM project credits, could only be traded via Annex I Parties' assigned amounts and that this trading could therefore only take place during the Kyoto Protocol commitment period of 2008-2012. Early JI actions (*i.e*. before 2008) could still be accounted for, but could only be traded between countries during 2008-2012. CDM credits, instead, could already be added to Annex I Parties' assigned amounts as of the year 2000. For JI projects, it was decided by the COP that countries with proper national GHG inventory systems in place, could follow an easier JI accounting process.

During the second negotiation phase on Kyoto mechanism (2001-2005 and beyond), decisions were taken on the operationalisation of JI and CDM given the boundaries set during 1998-2001. Here, negotiations strongly focussed on the conceptual weakness of JI and CDM that determining project-based GHG emission reductions is inherently difficult as this requires baselines which in most cases are hypothetical, counterfactual scenarios. Therefore, it is often difficult to precisely determine whether GHG emission reductions would not have taken place in absence of the JI or CDM project and, if so, to what extent emissions have been reduced. This aspect became particularly important when during the operationalisation of the CDM it turned out that many projects were in the area of implementing renewable energy technologies on new sites ('greenfields') with the energy product (mostly power) transferred to a grid, without knowing precisely what grid-connected capacity would be replaced by that. The main solution that was worked out during negotiations was the development of standardised baseline methodologies to calculate a GHG emission average of grid-connected

installations. At this stage, in the negotiated policy design, it was accepted that some CDM project aspects could not be fully measured in a GHG accounting process, while it was agreed, at same time, that asking due diligence from project developers (*e.g.*, the additionality test) would prevent large-scale emergence of non-additional emission reduction credits.

From the above, it can be concluded that an 'ideal' situation (point A in Figure 1-3) where all JI and CDM projects would unambiguously produce real, additional and verifiable GHG emission reductions and contribute to the host countries' sustainable development priorities and goals, could not be achieved: the additionality and baseline accounting procedures could become too complex and costly for that, and positive lists with only those projects that would 'by definition' support developing countries' sustainable development priorities were not accepted for most negotiation Parties. In order to achieve an agreement on modalities and procedures for JI and CDM, the negotiations offered more flexible interpretations of additionality assessments and (multi-project) baseline determination and passed the decision whether a CDM project contributes to sustainable development to the host countries (including the possibility that countries may be less critical on this criterion in order to attract more projects).

By doing so, the two negotiation stages described in this chapter managed to agree on a package which was more flexible in terms of GHG accounting strictness (as compared to the 'ideal' situation A in Figure 1-3), while still requesting due diligence from project developers in their project design work, and which was sufficiently pragmatic for enabling worldwide implementation of the Kyoto flexibility mechanisms. Based on this assessment, it can be concluded that basic condition 1 has been met during negotiations on JI and CDM operationalisation, while acknowledging that the 'acceptance' of non-additional projects under the Kyoto Protocol could in practice create a deviation, in terms of Figure 1-3, between end point D and 'ideal' point A.

Meeting basic condition 2: an enabling negotiation process for the Kyoto flexibility mechanisms

The process for negotiating JI and CDM modalities and procedures during 1998 and 2001 was largely similar to that before 'Kyoto': technical discussions and decision preparations were done at Subsidiary Body sessions, while decisions were taken or endorsed by the COP once a year. Since 2001, the main authorities in negotiating and interpreting the technical modalities and procedures of JI and CDM have been the CDM Executive Board and the JI Supervisory Committee, within the framework of the Marrakech Accords.

During the first, 'political', stage of negotiations, JI and CDM were covered by the boxes with crunch issues defined by the Dutch Presidency of COP-6. Through these boxes, the negotiations could be clustered so that agreement in one cluster would not have to depend on negotiation development in other clusters. In practice, however, this clustering did not result in a COP-6 agreement at its first session (in November-December 2000) as the integration of box outcomes into a 'President's Note' as the final negotiation text was not supported by consensus. The prolonged COP-6 meeting (in June 2001) took place against a totally changed backdrop for the Kyoto Protocol after the withdrawal by the USA and the activities of the EU and a number of key other Annex I Parties to keep the protocol alive. This also changed the process of negotiating the scope and flexibility of applying JI and CDM against complying with Annex I Parties QELRCs.

Once the negotiation process on the Buenos Aires Plan of Action had been completed with the 'Marrakech Accords', most negotiations on JI and CDM issues took place at the level of the SBSTA, but mainly at the level of the CDM Executive Board and the JI Supervisory Committee. As has been explained in this chapter, especially the role of the CDM Executive Board led to confusion among potential CDM stakeholders, which was largely based on the ambiguous formulation in the 'Marrakech Accords' of the concept of additionality and the information that would have to be included in the CDM Project Design Document.

On top of that, COP-7 requested the CDM Executive Board to develop and recommend general guidance to address the additionality requirement. By doing so, the COP in fact transferred part of its political decision making role to the more technical level of the CDM Executive Board. After all, when it turned out that several CDM project proposals based their baselines on aggregated sector averages (*e.g.*, for 'greenfield' grid-connected renewable projects), a stronger scope for free-riding could emerge. However, the question whether such free riding was acceptable was typically a political question as it directly touched upon in the integrity of the Kyoto Protocol and it would have been more logical to return this issue to the COP. Instead, the CDM Executive Board decided to unilaterally apply a strict interpretation of baselines and additionality, which in the first rounds of evaluating baseline methodologies led to a disappointingly small number of approved methodologies and much frustration among the first movers in the CDM market. In the course of time, the CDM Executive Board came to a more flexible interpretation of the additionality issue, but during these years (2003-2005), the COP hardly played a role in this process. Perhaps, earlier political guidance by the COP to this negotiation process could have contributed to a prompt start of the CDM.

In terms of meeting the condition of an enabling negotiation process, this negotiation file has shown that the CDM Executive Board decision to unilaterally adopt strict additionality rules, without consideration by the COP, created strictness in operating the CDM which initially hampered the development of CDM projects. In this respect, it can be concluded that basic condition 2 was not met at all times during the negotiations on JI and CDM operationalisation. It turned out that, while technicalities regarding instrument design and implementation (such as with the handling of additionality) could largely be left to technical negotiations (such as SB and CDM Executive Board), at several points during these technical negotiations, the debate became political as the negotiation outcome could have a direct impact on the overall integrity of the overarching policy regime, *i.e.* the Kyoto Protocol. At these stages, as illustrated in this chapter, the technical and political negotiation 'levels' did not 'communicate' well with each other, which limited the enabling capacity of the overall negotiation process towards a package for implementation of the Kyoto flexibility mechanisms.

Meeting basic condition 3: key tactical aspects affecting the negotiation result on the Kyoto flexibility mechanisms

As explained in Chapter 3, during 1998-2001, there were several differences of opinion between the EU, the Umbrella Group and the G-77&China on the strictness of the Kyoto Protocol, and consequently on the scope and flexibility of applying the Kyoto flexibility mechanisms. Generally, the EU and the G-77&China were in favour of a stricter interpretation of the Kyoto Protocol, whereas the Umbrella Group focused on more flexibility, among others through a wide interpretation of LULUCF options and a widespread use of the Kyoto flexibility mechanisms. These issues were specified in

negotiation boxes before the COP-6 negotiations which enabled negotiations both on individual issues and integrated packages (meeting basic condition 3).

As explained, the US withdrawal from the Kyoto Protocol in 2001 strongly changed the EU positions on a number of issues, including LULUCF and compliance, in order to gain support from Australia, Canada, Japan, and the Russian Federation. For the Kyoto flexibility mechanisms, the change in the US position resulted in a much more flexible EU position on supplementarity (shifting from a quantitative ceiling on the use of the Kyoto flexibility mechanisms to a more generally formulated qualitative restriction). In this respect, the EU (and also the G-77&China) was willing to accept a trade-off regarding the environmental strictness of using JI and CDM in return for a sufficiently broad support for the Kyoto Protocol. In terms of Figure 1-3 in Chapter 1, after the withdrawal of the USA from the Kyoto Protocol, there was an accelerated move from point A to intermediate outcome B, after which EU flexibility enabled a move towards outcomes C and D (meeting basic condition 3).

Finally, at the level of the technical discussions on CDM modalities and procedures, the CDM Executive Board's strict interpretation of the sometime ambiguous formulations in the 'Marrakech Accords' was continued for almost three years, which resulted in the first registered CDM projects in 2005, almost five years after the eligibility of crediting CDM projects under the Kyoto Protocol and more than three years after the Netherlands Government and the World Bank PCF contracted their first CDM projects (in this respect basic condition 3 was not met).

Eventually, the CDM, and later also JI, could develop into substantial project pipelines (see Chapter 4 and Section 5.6) which was largely due to the successful interactions that emerged between the CDM Executive Board and project developers after 2005. The latter group had to develop GHG accounting methodologies for their projects which the Executive Board had to approve. Similar methodologies per project type (both for large and small-scale projects) were subsequently consolidated by the Board, so that other project developers could use these methodologies, thereby saving time and resources (thereby meeting basic condition 3).

In conclusion, basic condition 3 in terms of decisive tactics supporting the negotiations on JI and CDM operationalisation leading to real, additional and verifiable GHG emission reductions, was met in terms of clearly distinguishing different JI and CDM-related issues in negotiation boxes at COP-6, allowing more GHG accounting flexibility after 2001 in order to obtain a broader support for the flexibility mechanisms and a more pragmatic approach by the CDM Executive Board after 2005 (especially with respect to the consolidation of existing accounting methodologies). The condition was not met with respect to the initial strict interpretation of additionality testing so that several early mover projects had to be revised.

Table 5-3 summarises these design, process-related and tactical aspects.

Table 5-3. Design, process-related and tactical aspects related to negotiations on Kyoto flexibility mechanisms

	Description of basic condition in negotiation file	Extent to which basic condition was met
1. Design of policy (instrument)	*Scope*: • Setting boundaries for JI and CDM use by Annex I Parties and determining what technologies to include/exclude from the mechanisms (*e.g.*, forestry, nuclear energy) • GHG accounting issues: baselines and limiting scope for non-additional projects *Principles*: • Supplementarity • Additionality • Sustainable development *Goals*: • Support Annex I Parties to achieve QELRCs and host countries to achieve sustainable development *Means*: • Baseline methodologies • Host country prerogative to decide on sustainable development criteria • Additionality tests for avoiding non-additional emission reductions claimed as credits	(+) The negotiations on the Kyoto flexibility mechanisms resulted in a package which was sufficiently pragmatic to enable worldwide implementation of the Kyoto flexibility mechanisms
2. Enabling negotiation process	*Meetings*: • Annual COP sessions • Meetings of SBSTA/SBI • CDM Executive Board and JI Supervisory Committee *Strategy and Responsibility*: • JI/CDM crunch issues were discussed at the level of SBSTA/SBI and decided by COP • Modalities and procedures for JI/CDM projects were decided by COP (2001) • Operational details were decided at level of CDM Executive Board and JI Supervisory Committee	(+) During 1998-2001, when negotiations had stronger political impacts, they were conducted at COP (–) During the technical negotiations (after 2001) on JI/CDM modalities, decisions on additionality had direct impact on the overall integrity of the Kyoto Protocol. However, technical and political negotiation 'levels' did not 'communicate' well
3. Decisive tactics and facilitation	• At COP-6, crunch issues were divided in separate boxes • US withdrawal from Kyoto Protocol led to more flexible rules for application of JI/CDM mechanisms • Acknowledgment that GHG emission reductions cannot be fully measured, so that a balance is found between having pragmatic procedures while avoiding systematic non-additional projects • Ambiguous formulation on additionality of projects/emission reductions led to lack of clarity at which level to address this aspect: COP or JI/CDM supervising bodies • In order to support development of GHG accounting rules, the JI/CDM supervising bodies approved and consolidated methodologies developed by market players, for wider use and project acceleration	(+)At COP-6, topics were specified in negotiation boxes to discuss individual and integrated issues (+) After US withdrawal from Kyoto Protocol, the EU accepted more flexible accounting procedures to gain support for the protocol (–) Strict interpretation by the CDM Executive Board of additionality and baselines delayed CDM project development (+) CDM Executive Board consolidated single-project baseline methodologies into standardised methods

Chapter 6. Negotiations on Standardised Baselines for JI and CDM Projects

6.1. Introduction

GHG emission reductions from a JI or CDM project are calculated as reductions below a baseline. As this scenario describes the situation that would have occurred in the absence of the project, it is counterfactual and therefore surrounded by uncertainties. Chapter 5 has also shown that in some cases the baseline may not provide adequate safeguards against free-rider behaviour which means that also non-additional projects may claim JI or CDM emission reduction credits. Baseline determination became an issue for climate policy makers for the first time during the second half of the 1990s when the first experiences with the AIJ pilot phase (see Chapter 4) showed that project developers handled the baseline issue in different ways. Some project developers simply assumed that the pre-project situation would have continued for the next 15 to 25 years, without taking into consideration any technological or policy change, whereas others used advanced (modelled) business-as-usual projections of the future situation, thereby keeping in mind expected changes in relevant project circumstances, such as government policy, international treaties, EU accession, *etc*. Some project developers simply indicated the baseline emission factor for their AIJ project without explaining the underlying methodology, which made an external review extremely difficult (Jepma, et al., 1998) (Jepma & Gaast, 2000) (PROBASE, 2003).

Despite the diversity in baseline methodologies used, the AIJ pilot phase made clear that transaction costs related to baseline determination could be rather high due to: the design of the methodology to calculate the baseline emission factors; collection of data; identification of the emission sources affected by the project; a study of the context of the host country and/or the region within which the project is located; and, the validation of the baseline scenario (see also Section 6.2). With a view to this, already during the AIJ pilot phase, several experts suggested standardisation of baseline methodologies for projects within the same category and, eventually, to calculate 'benchmark' emission factors for project categories per host country or representative region. Such standardisation would enable project developers to use already existing and approved baseline methodologies, or to simply apply the standardised baseline emission factors to their projects (Jepma, 1997) (Sathaye, et al., 2001) (Ruygrok, 2000) (Parkinson, et al., 2001) (PROBASE, 2003).

Although standardisation of baselines is generally considered to be beneficial in terms of reducing transaction costs per project, there are a number of issues that need to be resolved before it can be applied. First, there are also costs involved with determining the standardised baseline methodology and/or emission factors. Early CDM experience has shown that project developers were reluctant to determine such methodologies/emission factors individually, because once validated by a designated operational entity (see Chapter 5), a methodology/emission factor became publicly available and could be freely used by others without compensating the initial developer.

Second, standardisation of baselines could affect the allocation of JI and CDM projects if the resulting multi-project baseline insufficiently represents the project-specific circumstances and thus leads to an overestimation or underestimation of the emission reductions achieved.

Third, standardisation of baselines could also face a trade-off between, on the one hand, aiming at high-level environmental integrity and, on the other hand, enabling larger participation of investors in the project mechanisms. After all, as explained in Chapter 5, standardised baselines can be applied to multiple projects and are not directly linked to the project itself, so that there could be a risk of free riding because each project with GHG emissions below the standard baseline could apply for credits, irrespective of whether the project is an additional JI or CDM project or would have been carried out anyway. Preventing free riding in a system of multi-project or standardised baselines would require additional measures such as conservative baseline estimates or additionality tests next to the baseline. Although these measures could enhance the environmental integrity of the CDM or JI, they could also create a disincentive to invest in such projects, both for 'genuine' investors and free riders (Bernow, et al., 2000) (PROBASE, 2003).

How the latter 'dilemma' between environmental integrity and wide-scale applicability of multi-project baselines has been addressed in negotiations on baseline methodologies is analysed in this chapter with a view to the question whether and how basic negotiation condition 1, as introduced in Chapter 1, has been met. Meeting basic condition 2 is analysed in terms of how the JI and CDM supervising bodies, in collaboration with the COP and Subsidiary Bodies, have enabled the step-wise formulation of modalities and procedures for multi-project baselines. With respect to basic negotiation condition 3, tactical and facilitating aspects are identified which contributed to policy makers' knowledge base of multi-project baselines, such as from science and practical experiences, and subsequently had an impact on the negotiation outcome.

6.2. Impact of Standardised Baselines on Costs, Environmental Integrity and Allocation of JI and CDM Projects

A JI or CDM project is a GHG emission-neutral investment. A country with an assigned amount of GHG emissions under the Kyoto Protocol could increase this amount by reducing GHG emissions through a project on the territory of another country. If transaction costs are assumed to be zero and if it is assumed that baselines at all times correctly represent the situation in absence of the project, the allocation of projects takes place on the basis of an international comparison of marginal abatement costs (see Figure 4-1).[94] However, the theoretically optimal allocation of projects could be disturbed in the real world where transaction costs exist and the baseline is surrounded by uncertainties.

With transaction costs, the marginal cost curves for JI/CDM emission reductions (serving as the supply curves) shift upwards as for each quantity of GHG emission reduction produced the supply price (excluding transaction costs) is increased by the transaction costs (*e.g.*, project design costs). Similarly, the demand curve for JI or CDM emission reductions shifts upwards with transaction costs

[94] As has been shown in Chapter 3, industrialised countries listed in UNFCCC Annex II could reduce 'Kyoto' compliance costs by 75 to 90% if they would partly achieve the required reductions abroad (IPCC, 2001, p. 537).

(*e.g.*, search costs), so that the equilibrium price increases (Gaast, 2005) (Dudek & Wiener, 1996) (Krey, 2004).

Typical transaction costs for JI and CDM projects (concerning the GHG emission reduction component) are costs related to: identifying the project; obtaining approval of the project idea by the host country government; compiling the project design document; negotiating the emission reduction purchase agreement (ERPA) with the host country government and relevant institutes; validating the project design; registering a CDM project with the CDM Executive Board; and monitoring and verifying the project results.

In an overview based on early CDM projects (excluding small-scale projects), (Ellis, et al., 2004) found that the CDM-related transaction costs could vary from USD 50,000 per project to almost USD 270,000. According to (Ellis, et al., 2004), even the lower cost figure implies that a project would need around 10,000 tonnes emission reduction credits over a crediting lifetime to cover transaction costs (assuming a credit price of USD 5). Moreover, several programmes established to generate CDM credits, such as the Rabobank Carbon Fund, the KfW Bankengruppe Fund, and projects established under the CDM programmes of the Netherlands Government (*e.g.*, CERUPT), set a minimum to the amount of Certified Emission Reductions (CERs) that proposed CDM projects must deliver during the crediting lifetime (in most cases 500,000 tonnes), in order to cover project transaction costs (JIN, 2003c) (JIN, 2001d). Finally, the intermediate evaluation of the Dutch JI policy in 2005 showed that the transaction costs related to the purchase of JI credits by the Netherlands Government amounted to almost 25% of the nominal prices paid for these credits (CE, 2005, pp. 10, table 5).

The inclusion of a large set of modalities and procedures for baselines in the Marrakech Accords, as well as the specific additional rules set by the programmes of individual governments and multilateral funds, resulted in a rather large share of baseline-related costs in the overall transaction costs of the project design (Krey, 2004) (Ellis, 2006).

The procedures and modalities for baselines as included in the Marrakech Accords have been established in order to reduce the risk that project developers deliberately overestimate the baseline emission levels (see Chapter 5). High transaction costs as a result of detailed baseline rules or the overestimation of emission reductions due to inflated baselines in case of too lenient rules results in an allocation of JI and CDM projects which differs from an allocation based on an international comparison of marginal abatement costs only. With high transaction costs it becomes less attractive for investors to participate in JI and CDM projects so that the Kyoto Protocol compliance costs for industrialised countries increase. On the other hand, baseline inflation caused by too lenient rules cause that JI/CDM projects are no longer GHG-neutral and do not contribute – or at least to a smaller extent – to reducing GHG emissions globally.

With a view to the above, during the early years after the introduction of JI and CDM in the Kyoto Protocol, several literature sources recommended standardising baseline determination for JI and CDM projects (Jepma, 1997) (Jackson, et al., 2001) (PROBASE, 2003) (Kartha, et al., 2004). First, it was argued that with multi-project baselines costs related to compiling project design documents and the validation of the baseline could be considerably reduced. Second, with a multi-project baseline methodology, the scope for baseline inflation by project developers is much reduced, especially when the baseline emission factors are standardised.

A possible disadvantage of standardised, multi-project baselines is that they, in their turn, could also affect the allocation of projects. An example may clarify this. Suppose that in a particular country energy is produced by both coal and gas-fired plants. In this country, a CDM project aims at installing a modern gas boiler which emits fewer GHGs per unit of output than both the existing gas and coal plants. Should for the power sector in this country a multi-project baseline be determined based on the average emissions of the existing plants, the CDM project receives as credits the difference between the multi-project baseline emissions and the emissions of the modern gas boiler. This implies that replacing energy produced by a coal plant results in fewer credits than the actual emission reductions achieved, while investing in replacing gas boiler-based energy production results in more credits than actually achieved emission reductions. This could reduce the incentives for investors to invest in replacing coal-based energy capacity. In order to prevent such an adverse incentive, multi-project baselines could be determined per fuel or fuel technology; for example, one multi-project baseline covering the existing coal plants in the country and one for the gas boilers.

Also the choice of the region covered by the multi-project baseline is important for the extent to which the baseline can be considered reasonable. The EU-funded research project PROBASE,[95] among others, concluded that strong differences could exist between regions within potential JI and CDM host countries in terms of industrialisation, energy intensity and GHG intensity of production and consumption (see also Section 6.4). In several developing countries, the GHG intensity in the rural areas, which are often not even connected to the energy grid, is much lower than in the industrialised areas. Determining national average multi-project baselines for these countries could imply that these would neither be representative for the industrialised, nor for the rural area. Therefore, it is important that a multi-project baseline is sufficiently representative for the region where the project is implemented.

6.3. Theoretical Aspects of Multi-Project Baseline Determination

6.3.1. Introduction

Standardisation of baseline determination for JI and CDM projects can take place in a number of ways:

- Standardisation of procedures, which involves the identification of specific steps to be taken by all project developers when determining a baseline. Generally, this type of standardisation does not involve standardised parameter values or emission factors. An early example of such a standardised procedure has been the guidelines document for baselines published by the Netherlands Government when it launched its JI and CDM tender programmes in 2001 (Ministry of Economic Affairs of the Netherlands, 2001). This document provided specific systematic guidance for project developers on how to determine values for each baseline parameter. Similarly, the methodologies developed for CDM projects and approved by the CDM EB (see

[95] The research project "Procedures for Accounting and Baselines for JI and CDM projects" (PROBASE) was carried out by a European research consortium under the EU V Framework Programme (PROBASE, 2003): http://jiqweb.org/images/stories/mifiles/projects/ClimatePolicy/probase.pdf.

Chapter 5 and Section 6.5.4 below) can be considered standardised baseline procedures as other project developers can use them as so-called 'approved methodologies'.

- Standardisation of baseline parameter values, such as: a standard system boundary (*e.g.*, one or two levels upstream and downstream); a standard fuel basis (*e.g.*, average emissions of power plants installed in a host country during the past 5 years); a standard geographical scope (*e.g.*, the geographical scope must be representative for the project); whether to derive baselines from recently installed plants in the host country (*e.g.*, the last two or five years) or to use projections of the future, *etc.*
- Standardisation of baseline emission factors, which involves the calculation of multi-project GHG emission reduction factors per unit of output for a particular project type in a particular host country (*e.g.*, tonne CO_2-eq. per kWh for grid-connected CDM power sector projects in Inner Mongolia, China). With such benchmarks, baseline determination is basically reduced to multiplying the standardised emission factors with the expected annual project output during the project's lifetime. Benchmarks are the most far-reaching form of baseline standardisation and leave no scope for 'talking up' the baseline emission levels by project developers to earn more credits. An early approach to develop such benchmarks was proposed by (Luhmann, et al., 1995), who suggested developing a default project which would represent the most likely activity under business-as-usual circumstances for a particular sector in a host country. The emissions per unit of output of the default project would serve as baseline emission factors for JI/CDM projects.

Irrespective of whether standardisation involves a common methodology or a benchmark emissions factor, a key requirement is that baselines reasonably identify what situation is replaced by the project. One method to identify this is to look at the context in which the project is planned. This method generally identifies two main groups of projects:

- Retrofit projects, which aim at modifying existing plants to operate in a different way. For example, a JI or CDM retrofit project could modify an old oil-fired boiler in order to produce the same output with a gas-fired boiler. No new sites are involved with this type of project.
- Greenfield projects, which always involve a new or greenfield site and which have been planned to meet an increase in energy demand, to replace written off capacity, or to install new renewable energy capacity.

In addition, the baseline must identify what activity is affected by the project, *e.g.*:

- Improvement of the energy efficiency of a particular production process in an energy or industrial plant. For example, the efficiency of fuel to electricity conversion of an old coal-fired power plant may only be about 30%, whereas a new plant may have a 38% or higher level of efficiency. In an industrial process, efficiency gains can be achieved through better insulation or recycling of heat.
- A fuel conversion in energy production or industrial processes, such as, for example, switching from burning coal to natural gas firing or switching from oil to wind energy.
- Demand-side management projects which affect the demand for heat or electricity service, such as activities to replace incandescent light bulbs with energy saving compact fluorescent bulbs, or projects to increase the energy performance of residential buildings.

Finally, it should be noted that for greenfield energy sector projects there is no sharp conceptual dividing line between multi-project and project-specific baselines. After all, as has been explained in

Chapter 5, for these projects a baseline is generally based on an analysis of the entire grid or the relevant part of the grid, in order to identify the capacity that would under business-as-usual circumstances be the first to be dispatched. Such baseline methodologies strongly resemble multi-project baseline methods.

6.3.2. Multi-project baseline parameters

In order to identify which installations/units should be included in a multi-project baseline, several methodologies were identified in the literature (Sathaye, et al., 2001) (PROBASE, 2003) (Jackson, et al., 2001) (Schneider, et al., 2012) (Gaast, 2005) (Hayashi & Michaelowa, 2013), such as:

- Operating margin method. This methodology estimates which of the currently operational installations are likely to be replaced when new installations (such as through JI or CDM projects) are added to the system (such as an electricity grid), in a situation where existing energy demand is not expected to increase (see for a further explanation elsewhere in this section). The method could, for instance, simply take an average of the GHG emissions of all operational installations or it could identify, *e.g.*, the oldest installations for baseline determination, thereby assuming that these would be the first ones to be replaced, *etc*. In general, the operating margin method is applied when it is difficult to precisely identify what capacity a grid-connected JI or CDM project replaces (Lee, et al., 2004).
- Comparable investments during the past 5 years. This methodology assumes that the technology implemented in a sector in the host country during the last 5 years will most likely also be the technology that would have been implemented in the future in absence of a JI or CDM project. This methodology would be specifically suitable for greenfield projects but could also be used for retrofit projects to find out whether the existing plant would likely have been replaced or retrofitted anyhow.
- Currently best available techniques. Baselines determined with this methodology assume that the host country would in the future have implemented the best techniques (technologies or management programmes, such as demand-side management) that are available in the country. This method requires an (economic and technical) analysis to determine which techniques are feasible for the host country and/or a policy analysis to find out which techniques are mandatory by national or international policies.
- Economically most attractive courses of action or least-cost technologies. These baselines assume that in the country the least cost/economically most attractive course of action would have been followed in the absence of the JI or CDM projects.

From the above description of multi-project baseline methodologies, the following categories of baseline parameters can be derived:

1. Choice of fuel technology: a multi-project baseline can be based on one fuel technology (‘technology/single-fuel’) or on an average of fuels/technologies for the entire sector or country (multi-fuel benchmarks or ‘sector averages’).
2. Time aspect: multi-project baselines can be derived from recent capacity additions in the relevant sectors in the host country or region (*e.g.*, ‘recent comparable 5-year’, assuming that recent capacity additions are most representative of what would have been added in the absence of the JI or CDM project), or based on expected future added capacity (*e.g.*, ‘Currently best available

techniques benchmarks' or 'Economically most attractive/least cost technology benchmarks'). This consideration leads to the decision on the time horizon to apply for determining a benchmark for a particular host country.

3. Geographical scope: a multi-project baseline can be set for a region within a country, nationally, or regionally for a group of countries. This parameter determines the geographical scope of the baseline.

Figure 6-1, as well as the discussion on parameters below, shows that several multi-project baselines or benchmarks are possible given the combinations and range of the parameter values. The possible parameter values and their implications for the eventual multi-project baseline scenario are further discussed below.

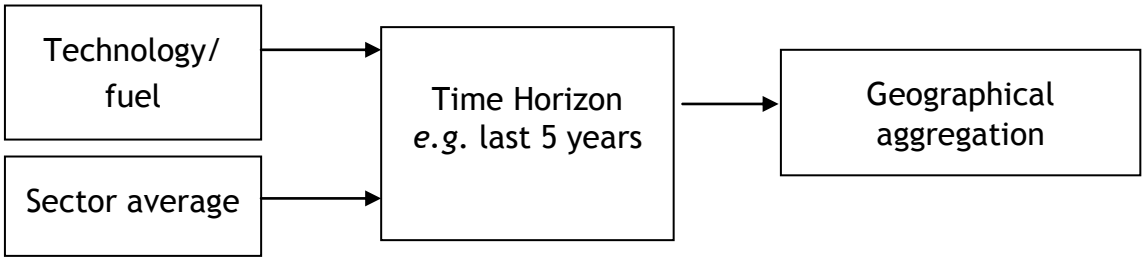

Figure 6-1. Multi-project baseline parameter choices (PROBASE, 2003, pp. 42, Figure 2.2)

Technology/fuel combination or sector average

Table 6-1 shows examples of possible JI and CDM retrofit projects in the power and heat sectors and possible multi-project baseline (benchmark) approaches. For example, a grid-connected project could aim at a switch from burning coal to burning natural gas. A multi-project baseline for this sector could be determined by calculating the average emissions from all fuel technologies connected to the grid (sector average of multi-fuel method) or by taking the average emissions of the fuel technology that is replaced by the project (single-fuel method), expressed as kg CO_2-eq. per unit of kWh or GJ. Under the technology/single-fuel approach instead, the baseline would contain the average emissions of currently installed coal-fired boilers or oil-fired plants, depending on whether projects replace coal or oil-based technologies. A main advantage of such an approach is that it creates more incentives for replacing coal-based technologies than the multi-fuel method does since the emission reductions achieved will be fully credited.

The above examples assume that the present energy mix would, under business-as-usual circumstances, have continued to exist in the near future. However, reality could be much more complex. For instance, there could be a government policy which requires all plants of a certain type to be replaced anyhow, or which sets targets for, *e.g.*, the share of energy to be generated with renewable energy sources. Such a policy context could, in this stylistic example, lead to a baseline for a coal-to-gas project based on a gas-firing technology instead of the existing coal-based technology (see Table 6-1).

The choice which technology to include in the baseline is also an important aspect of determining baselines for grid-connected greenfield projects. Since these projects do not replace a particular, clearly identifiable plant, it must be explored which grid-connected capacity they replace. This largely depends on whether the project aims at meeting existing energy demand or new demand. In a situation where the energy demand in a host country is not expected to increase, the implementation of the project implies that (the output of) an existing plant will become redundant and could be closed. The latter plant, which is the marginal plant, could, for instance, be the oldest and least efficient plant. Alternatively, if a country must import natural gas, whereas it is largely endowed with coal, the marginal plant could be a gas-fired boiler (which would make the country less vulnerable for international gas price increases). As explained above, the case of a JI or CDM project replacing existing demand has been referred to in the literature as the operating margin baseline method (Kartha, et al., 2004) (Violette, et al., 2001) (Sathaye, et al., 2004) (Lee, et al., 2004).

In case a project meets new energy demand, *e.g.*, the production capacity in the host country's energy sector is fully utilised, the baseline would identify the plant that would have been built in absence of the project in order to meet the new energy demand. This is referred to as the built margin baseline method.

Table 6-1. Possible benchmark approaches for power and heat sector projects

	'Sector average/multi-fuel' benchmark approach	**'Single-fuel' approach**
	Fuel switch projects	
Coal-to-gas	'Average' coal/oil/gas (average emissions of the energy sector/energy mix)	• Coal (average emissions of coal-fired plants in the sector) or • Oil (average emissions of oil-fired plants in the sector)
Oil-to-gas	'Average' coal/oil/gas (average emissions of the energy sector/energy mix)	• Oil (average emissions of oil-fired plants in the sector), or • Gas (average emissions of gas-fired plants in the sector)
	Energy efficiency improvement	
Boiler/burner system	'Average' coal/oil/gas (average emissions of the energy sector/energy mix)	'Average' coal/oil/gas
Demand-side management	'Average' coal/oil/gas (average emissions of the energy sector/energy mix)	'Average' coal/oil/gas

Time scale for the baseline

The parameter of time scale deals with the question of whether the standardised baseline will be derived from historic emissions data in the sector or country or from expected and/or planned developments in the future. Historic emissions data could be collected from investments in the recent past or from currently operational plants (see above). Assuming that recently installed plants are generally more efficient, a benchmark derived from recent investments would lead to a lower baseline

emissions factor than one derived from currently operational plants as this data set could also contain plants that have been operational for a longer period of time than, say, the last five or two years.

Multi-project baselines could also be based on projections of the future energy mix, for instance, with the help of sector or country-level models (see Section 6.4). Such projections would take the present situation as a starting point and explore, assuming optimised decision-making (*e.g.*, cost minimisation), the most likely development of the energy mix in the country or region during the next, say, 10 to 20 years. The GHG emission levels related to this optimised energy mix form the multi-project baseline or benchmark.

Geographical scope of the baseline

Multi-project baselines can be calculated for different levels of geographical aggregation. The least aggregated multi-project baseline would be the one that covers a particular region within a country. One selection criterion for determining the region to which a benchmark applies is the extent to which there are interdependencies between different regions. For example, in some large countries (*e.g.*, China, India, Russian Federation) the different geographical regions are, in terms of energy system or grid interdependencies, relatively separated from each other so that an investment in, *e.g.*, a power plant in one region does not affect the energy system in the other regions. When such a condition is fulfilled, regional benchmarks can be constructed for each region.

In case there are significant interdependencies between different regions in a country, a national benchmark would be a better aggregation option. However, system interdependencies do not always stop at the national border. For example, in case a country is part of an international liberalised energy market, a multi-country benchmark would need to be derived. Box 6-1 shows a practical example of choosing the most reasonable geographical aggregation for a multi-project baseline.

An advantage of applying a low aggregation level for multi-project baselines is that projects are implemented where they are most effective, *i.e.* in regions with highly carbon-intensive industries. However, this could result in a reward for countries which in the past (indirectly) subsidised the use of carbon-intensive fuels, whereas countries with a less carbon-intensive production process would acquire fewer JI or CDM investments.

Using multi-country or even global benchmarks implies that there is no geographical ‘preference’ for investors because a particular project, *ceteris paribus*, will be rewarded with the same amount of credits irrespective of where it is implemented. However, there could be a problem that a global or even a country benchmark may not be justifiable for some project types. Moreover, a global, multi-country or even national-scale benchmark may contradict with the *Marrakech Accords* texts on baselines, which say that baselines should take into consideration the project context (UNFCCC, 2002b, pp. 37, para. 45(e)), which complicates applying global or multi-country benchmarks as these are almost entirely separated from the project context (UNFCCC, 2002b, pp. 46, Appendix C(b)(v)).

Box 6-1. Choosing the geographical breadth of the Huitengxile wind farm project, China

Huitengxile is located in Inner Mongolia in China. This CDM project intended to install a wind farm and deliver the electricity produced (45 GWh in 2004; 66 GWh as of 2005) to the Inner Mongolia Western grid. The project was scheduled to deliver electricity to the Inner Mongolia Western Grid which is strongly interconnected with the North China Power Grid (in 2004, 27.5% of the Inner Mongolian grid electricity is exported to the North China grid); as part of the North China grid it is also (indirectly) connected to the national grid (SenterNovem, 2004).

The project developers selected as the baseline for this wind farm project a scenario containing the average mix of electricity generated on the North China power grid. Limiting the regional aggregation of the baseline to the Inner Mongolia region in China was not considered reasonable because of the strong interconnection between the Inner Mongolian and the North China grid. Therefore, the project was expected to partly replace the energy mix of the North China grid. Aggregation of the baseline for the entirety of China was not considered necessary as the interconnection between the larger regional power grids (such as the North China grid) is relatively small and it was considered unlikely that the Huitengxile wind farm would have any effect on what will take place outside the North China grid (SenterNovem, 2004).

Variations in parameter values leading to different benchmarks

The eventual multi-project baselines or benchmarks are determined by the values chosen for each of the parameters described above. For example, it would make quite a difference if a multi-project baseline for a coal-to-gas JI project in a Russian power plant near St. Petersburg:

- assumes coal as the baseline fuel technology, investments in the past 10 years as the time horizon, and the entire Russian Federation as its geographical area, or
- chooses the European part of the Russian Federation as the appropriate region for the benchmark, gas as the baseline fuel, and takes the past two year as the time horizon in combination with modelled projections of the optimal future energy mix in the selected region.

The parameter value choices are based on assumptions regarding the business-as-usual situation in the sector in the host country, the host country itself or the region. Box 6-2 shows an example of the Surduc-Nehoiasu run-of-river hydro project in Romania (selected as a JI project by the Dutch ERUPT programme), which illustrates how parameter value assumptions could influence the eventual baseline emissions scenario (both for single-project or multi-project baselines).

Box 6-2. General assumptions and considerations for baseline selection Surduc-Nehoiasu project

The project design document for the JI Surduc-Nehoiasu project assumed that the project would, given the over-capacity in the Romanian grid, replace *existing* capacity. As a run-of-river (RoR) plant, it 'must run' (with the flow of the river) and it was assumed that the plant would displace *baseload* grid-connected capacity. For the baseline, the project developers considered two options:

1. A poor economy scenario: It could be argued that the analysis of what would be the marginal plant (the one to be substituted) may change over time. The costs of maintenance per output are highest for the old coal fired plants in Romania, as they have high outage time due to repairs. However, coal is a relatively cheap and domestically available fuel. The gas-fired plants are easier to maintain, but natural gas is more expensive to buy and with price fluctuations on the international market. Therefore, since there were arguments both in favour of coal and gas, the average fossil fuel grid mix could be assumed as a surrogate for the marginal plant.
2. An economic recovery scenario: In this scenario, it could be assumed that economic recovery leads to increased investments in the power sector, with more efficient plants, and gradually lower a emissions factor of the fossil fuel component of the grid mix. The scenario also assumed that more natural gas will be imported and used, whereas old power plants will be phased out because of more stringent environmental regulations due to Romania's accession to the EU.

6.4. Case Studies of Multi-project Baselines Determination in the Power Sector

6.4.1. Comparing benchmarks

During 2001-2002, a European research consortium[96] carried out a EU-funded research project called "Procedures for Accounting and Baselines for JI and CDM Projects" (PROBASE, 2003).[97] The objective of PROBASE was to explore ways to streamline the overall accounting of GHG emission reductions achieved by JI and CDM projects for more transparent procedures, lower transaction costs and ensured environmental integrity. The analysis paid attention to all steps in the JI and CDM project cycle, as discussed in Chapter 5, but a considerable component of the work was dedicated to standardisation of baselines, in combination with an analysis of how such standardisation could lead to a reasonable probability that JI and CDM emission reductions claimed would be additional.

An interesting aspect of the work undertaken by PROBASE was the application of several multi-project baseline methodologies, identified in the literature (similar to those discussed in Section 6.3), to actual projects in potential JI and CDM host countries, such as Indonesia, Russian Federation, and

[96] The consortium was formed by the following institutes: Joint Implementation Network (JIN, the Netherlands, co-ordinator), Decision Support System Laboratory of the National Technical University of Athens (EPU-NTUA, Greece), Centre for Environmental Strategies at the University of Surrey (CES, UK), Hamburg Institute for International Economics (HWWA, Germany), French-German Institute for Environmental Research at the University of Karlsruhe (UNIKARL-DFIU, Germany), and Factor Consulting + Management Ltd (Factor, Switzerland). The author of this study was a member of the research team, as part of JIN's staff.

[97] EU Fifth Framework Programme, sub-programme Energy, Environment and Sustainable Development. This section is largely based on the research conducted under PROBASE by the entire project team, including and under co-ordination of the author of this study.

South Africa. As such, a sensitivity analysis of how applying different multi-project baseline methodologies would affect baseline emission levels, was carried out for a number of projects.[98] Below follows a summary of the benchmark comparison for the case study of the Sarulla geothermal project in Indonesia.[99]

Table 6-2 shows the benchmarks constructed for this analysis. Sarulla is located on North Sumatra, Indonesia, and the project aimed at replacing grid-connected electricity production capacity by geothermal energy. The project could be classified as a greenfield activity. As explained in Section 6.3, multi-project baselines or benchmarks can be determined using different aggregation dimensions such as sectoral, geographical and fuel/technology paths, as well as using historical, current or projected data samples. For the purpose of comparison, the project's lifetime was considered 20 years (from the year 2000 through 2020) and benchmarks were calculated for this time interval.

Next to comparing the several possible multi-project baselines with each other, also a comparison was made with the baseline that the Sarulla project developers had constructed themselves and reported to the UNFCCC secretariat. This baseline assumed that in absence of the project the power to be produced by the geothermal installation would have been produced by a coal power plant with 36% efficiency, fed with sub-bituminous coal. This resulted in an officially reported baseline emission factor of 0.964 tCO_2/MWh, which was assumed to remain constant for the whole project lifetime. From Figure 6-2, which shows the benchmarks listed in Table 6-2 and calculated for Indonesia, it can be concluded that this baseline emissions factor was considerably higher than the benchmarks constructed in PROBASE.

[98] For the full analysis, the reader is referred to the final report of PROBASE (PROBASE, 2003).
[99] This analysis has been conducted as part of the PROBASE project, thereby applying the PERSEUS and Reflex models, which were operated for the PROBASE project by the French-German Institute for Environmental Research at the University of Karlsruhe (UNIKARL-DFIU), Germany.

Table 6-2. Multi-project baselines/benchmarks constructed for Indonesia

Benchmark name	Short description
B1 World's best region	Benchmark based on the weighted average emissions of all fossil fuel power plants (coal, oil, natural gas) in the world's best region, using historic data. The world's best region has the lowest weighted average emissions[100] of fossil power plants of all the world's regions.
B2 World average	Benchmark based on the weighted average emissions of all fossil fuel power plants (coal, oil, gas plants) in the world, using historic data.
B3 OECD average	Benchmark based on the weighted average emissions of all fossil fuel power plants (coal, oil, gas plants) of all OECD countries, using historic data.
B4 National energy sector average in Indonesia	Benchmark based on the weighted average emissions of all Indonesian power plants (fossil fuelled and renewables) in the year 2000. Its value is 0.54 tCO_2/MWh and is assumed to remain constant for the period 2000-2020[101].
B5 National energy sector projected average in Indonesia	Benchmark based on the projected weighted average emissions of all Indonesian power plants (fossil fuelled and renewables) until the year 2020[102].
B6 National fossil fuel average in Indonesia	Benchmark based on the weighted average emissions of all fossil fuel power plants (coal, oil, gas plants) in 1998. Its value is 0.761 tCO_2/MWh and is assumed to remain constant for the period 2000-2020[103].
B7 Best Available Technology (BAT)	Natural Gas Combined Cycle Advanced is considered the default BAT with an emission factor of 0.36 tCO_2/MWh that remains constant for 2000-2020.
B8 Fuel-specific, combined country and regional benchmark for Indonesia	The benchmark is calculated according to the methodology described above.
PERSEUS	Benchmark constructed through an energy sector optimisation effort (see Section 6.4.2).
Reflex	Benchmark constructed through an energy sector optimisation effort; Reflex is a simplified version of the PERSEUS energy-system model (see Section 6.4.2).

Source: PROBASE, 2003

[100] The data for B1, B2, B3 and B8 benchmarks have been taken by the PROBASE team (PROBASE, 2003) from (IEA, 2000).
[101] The data for B4 was derived from (State Ministry for Environment, 2001).
[102] The benchmark B5" was derived from the MARKAL model and implied that after 2005, fossil fuels, especially coal, would rapidly grow as a fuel for power generation; hence, the trend of the benchmark emission factor was an increasing one. The data for B5 was derived from (Government of Indonesia, 1999).
[103] The data for B6 was derived from (IEA, 1999).

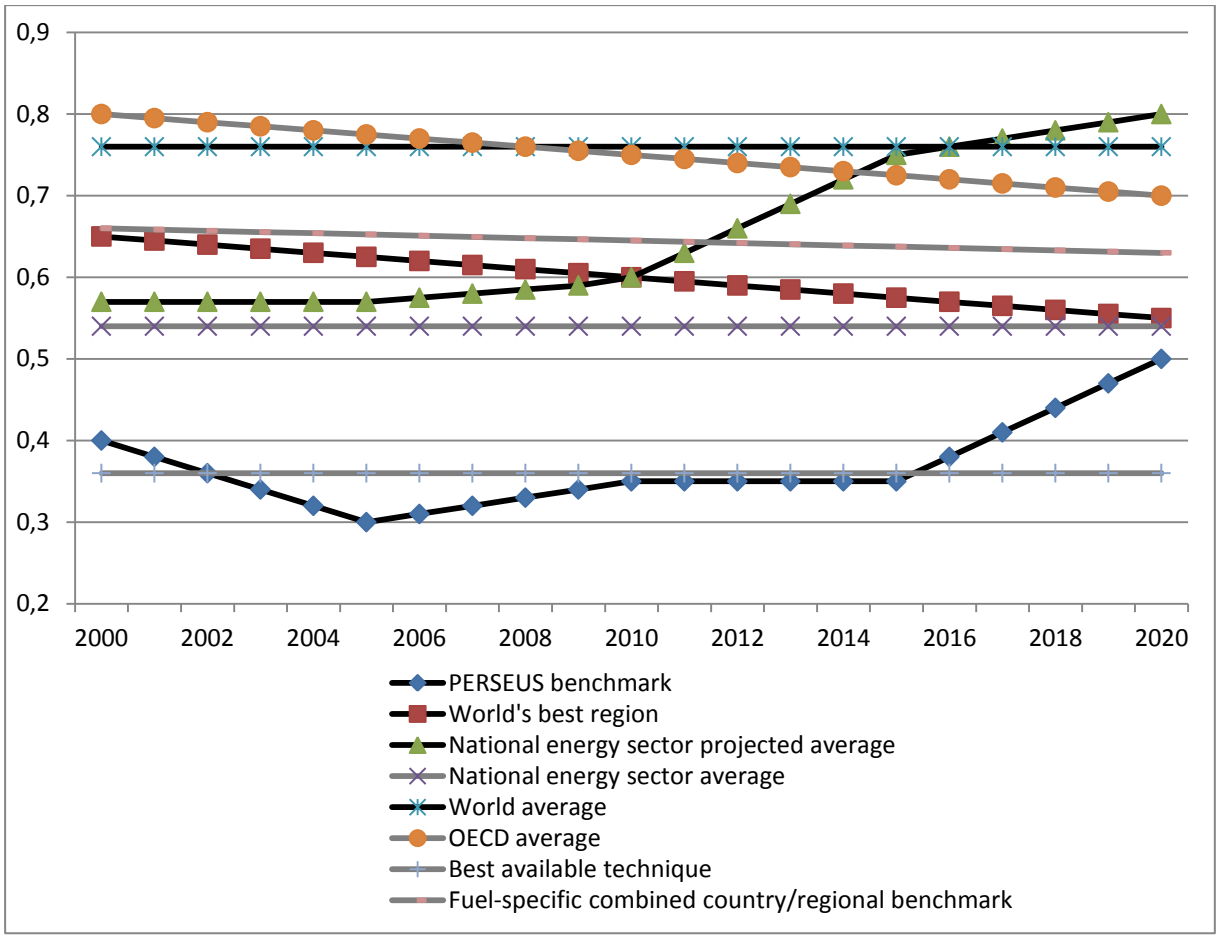

Figure 6-2. Comparison of the benchmarks for the Sarulla geothermal project – tCO_2/MWh (PROBASE, 2003)

The multi-project baseline scenarios shown in Figure 6-2 can be explained as follows:

- The **National energy sector projected average** benchmark assumed that as of 2010, based on cost considerations, mainly coal capacity would be added to the energy sector capacity in Indonesia to meet increased energy demand. The increasing slope of the curve after 2010 reflects this.
- The **National fossil fuel average** benchmark was derived from the average emissions factor for power generation from fossil fuels in 1998 and assumed this average to remain constant in the future. Consequently, it did not take into account any changes in the power generation in the future (similar to the **National energy sector average** benchmark based on year-2000 levels).
- The **World average,** the **World's best region** and the **OECD average** benchmarks had the highest spatial aggregation level of all multi-project baselines analysed and assumed that in the near future, Indonesia would have introduced world average, OECD average power sector technologies or technologies applied in the region with the lowest GHG emissions per energy output unit. Of these three baselines, the World's best region benchmark was the most conservative one.

- The **Best Available Techniques (BAT)** benchmark reflected the most conservative multi-project baseline level for Indonesia.[104] For the case of Indonesia, this benchmark implied that in order to be eligible for crediting, a CDM natural gas project should be better than an advanced combined cycle-technology or be a renewables project with no emissions at all.
- The **Fuel-specific, combined country and regional benchmark** linearly combined the weighted average emissions factors of all currently operational fossil-fuelled power plants of Indonesia, those of the region East Asia and ones of the World's best region. As this benchmark used already available data, its construction was not cumbersome and its development costs could be kept low. The benchmark combined some of the above benchmarks as it took the present situation of fossil fuel plants in Indonesia as a starting point and added to that scenario the assumption that Indonesia's development would be in line with that of the East Asian region with the availability of technologies that are currently operational in the World's region with the lowest GHG emissions from fossil fuel plants. In general it can be argued that the 'Fuel-specific, combined country and regional benchmark' provided a balance between the tighter benchmarks and the more lenient ones, which was reflected by the fact that the amount of GHG emissions reduced below the benchmark was exactly in the middle of the emission credits of all the other benchmarks.

6.4.2. Multi-project baseline modelling

In addition to determining a number of different multi-project baselines, based on different assumptions about the business-as-usual course of action in the host countries, the project PROBASE also explored the applicability of energy-system models in determining multi-project baselines (PROBASE, 2003). For this purpose, the PERSEUS (Programme Package for Emission Reduction Strategies in Energy Use and Supply) model was used, as developed by the University of Karlsruhe (Germany) and run by UNIKARL-DFIU[105] staff in the project PROBASE (PROBASE, 2003). PERSEUS is a so-called bottom-up model based on a technological representation of the entire energy sector, starting from the extraction of primary energy carriers to final energy use (via imports, conversion, transport, distribution of final energy). Technical systems within the energy sector are characterised by technological, economic and ecological data and are inter-connected by energy or material flows. Bottom-up models treat economic growth (annual GDP growth), as well as other macro-economic indicators, as fixed exogenous determinants.

PERSEUS makes projections of the future mix of electricity production techniques in the host country. It takes the present composition of the energy mix as a starting point and, based on a forecasted future electricity demand (*e.g.*, derived from official sources such as the International Energy Agency/OECD) and an assumed technological development, projects how this energy mix is likely to develop into the future (*e.g.*, larger share of renewables or larger share of electricity produced with gas-fired plants). A key assumption in this respect is that operators aim at minimising investment and operational costs when taking decisions on the composition of the energy mix (*e.g.*, coal technologies might be cheaper than gas installations but may require higher maintenance costs).

[104] The BAT in this context refers to the internationally existing best available technique, which is different from BAT in the *Acquis Communautaire* of the EU, which defines BAT as best among available techniques in EU member states (Gaast, 2003b).
[105] See footnote 96.

The result of the PERSEUS modelling is a cost-optimal future composition of the energy mix in the power sector in the particular country or region. Subsequently, for each technology in this optimal energy mix the GHG intensity is determined in terms of tonne CO_2-eq. per MWh produced. Aggregation of these GHG intensities results in an overall future GHG emissions figure per MWh for the energy mix concerned. Repeating this analysis for a number of periods delivers a multi-project baseline scenario for the power sector in the region concerned.

Case study: Indonesia

One of the PROBASE case study projects to which the PERSEUS model was applied is the Sarulla geothermal energy project in Indonesia (see above). For Indonesia, PERSEUS distinguished two regions: the islands of Java and Bali on the one hand, and the non-Java/Bali region on the other hand. This distinction was based on the fact that Java and Bali are strongly interconnected via electricity transmission lines, whereas the two islands are rather separated from the rest of the country. Figure 6-3 shows some parameters for multi-project emission factors that could result from the PERSEUS model[106]. First, projects could be categorised as power sector investments in the rural areas, in central electricity production, or for industrial production. Second, the relevant distinction in regions is between Java/Bali and non-Java/Bali. Finally, projects may be classified according to the load range of the technology under consideration.[107]

Since Sarulla is located on North Sumatra, the relevant PERSEUS multi-project baseline/benchmark was the one for non-Java/Bali. According to PERSEUS, following a cost-optimal energy mix composition path, up to 2010 the energy demand in the region would increasingly be met by renewable energy sources as new geothermal plants were planned to become operational in the region as of 2005. However, after 2010 energy demand would increasingly be met by energy produced with fossil fuels, which would then considered to be more cost-effective than constructing new geothermal power plants. A summary of baseline GHG emission factors for potential CDM projects in Indonesia up to the year 2020 is presented in Table 6-3, which includes the classification of projects into different regional areas, sectors and load ranges.

Emission factors of the rural Non-Java/Bali region have not been subdivided into load ranges as only one technology (diesel generators) is added to satisfy demand in all load ranges. In Java/Bali, rural electricity demand will exclusively be satisfied by central electricity generation, so no specific emission factors have been calculated for that. The table also indicates that the emission reductions granted to a specific CDM project varies widely depending on the assignment of the project to one of the relevant categories. This fact implies that a standardisation of emission factors may only be justifiable up to a certain level of aggregation and that a sensible differentiation of standardised emission factors is vital for maintaining the environmental integrity of mitigation activities under the

[106] PERSEUS was operated by the partner UNIKARL-DFIU in the project PROBASE and also the case study was conducted by this partner. The description of the case study has been derived from project report (PROBASE, 2003). See also footnote 99.

[107] In the case of Indonesia, such a classification has been included using a technology's annual operating hours as a criterion for its affiliation to a load range. Base load includes technologies running more than 6000 hours per year and peak load is characterised by an operation of less than 1500 hours. The remaining plants deliver intermediate load electricity.

Kyoto Protocol by minimising leakage and free riders while still providing sufficient incentives for investors to take such projects into consideration.[108]

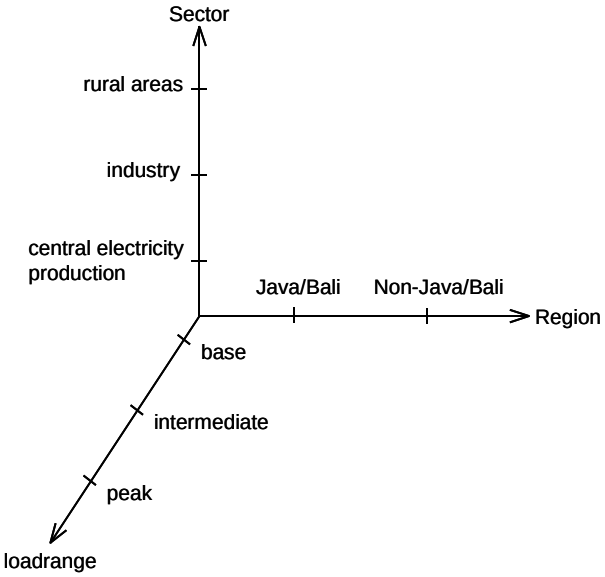

Figure 6-3. Parameters for multi-project baselines in the Indonesian power sector[109]

Table 6-3. Average emission factors for the Indonesian electricity sector in gCO_2/kWh

Region	Sector	Load range	2000	2005	2010	2020
Java-Bali	Central electricity production	Base	615	530	608	659
		Intermediate	408	388	388	388
		Peak	628	727	669	626
	Industry	Base	409	658	744	789
		Intermediate	920	423	404	404
		Peak	697	628	610	629
	Rural		-	-	-	-
Non-Java-Bali	Central electricity production	Base	405	293	349	516
		Intermediate	1,212	1,149	497	388
		Peak	673	747	763	800
	Industry	Base	526	697	754	788
		Intermediate	920	429	404	404
		Peak	674	643	604	663
	Rural		889	889	889	889
Average emission factors Indonesia			594	572	630	680

Source: PROBASE, 2003.

[108] In this context it is illustrative to compare the PERSEUS multi-project baselines with the national average-based baselines shown in Figure 6-1. Since the latter baselines calculate average emission factors for the whole country, they underestimate baseline emissions for Java/Bali and overestimate baseline emissions for non-Java/Bali. As shown by Figure 6-2, the PERSEUS multi-project baselines were more conservative (*i.e.* lower baseline emission factors) than the national average-based baselines for Indonesia.

[109] Criteria for possible sub-sets of emission factors have been developed by the project PROBASE (DFIU/IIP & EPU-NTUA, 2003, p. 36).

Case study: South Africa

The case study described how the company Eskom, in 2000, generated approximately 95% of the electricity in South Africa and also owned and operated the national transmission system. In 2000, the generating capacity in 2000 (36,500 MW) is primarily coal-based but also included: one nuclear power station at Koeberg (1,930 MW), two gas turbine facilities, two conventional hydroelectricity plants, and two hydroelectric pumped-storage stations. In addition to serving the domestic market, Eskom also exported power to Botswana, Lesotho, Mozambique, Namibia, Swaziland and Zimbabwe.

The PERSEUS model for South Africa was divided into a geographical part covering the eastern region and a part covering the western region of the country. The reason for this partition was that electricity production in South Africa was mainly concentrated in the eastern provinces of Mpumalanga and Gauteng. In the year 2000, total domestic electricity demand was about 181 GWh of which 76% was consumed in the Eastern provinces while 24% was consumed in the western part (PROBASE, 2003, p. 74). The PERSEUS model assumed this share to remain constant in the near future. Furthermore, a relatively moderate annual energy demand growth of 2.8% was assumed as input into the model. In a cost-optimal development of the South African energy system, there would be an important role for domestically available hard coal. Existing capacities in the electricity sector would be sufficient to provide electricity up until 2010. After that, additional capacities would be required, *e.g.*, reactivated and new high-efficiency coal-fired stations, nuclear, gas, and water capacities (import).

Table 6-4 shows baseline emission factors per kWh electricity produced for the entire country as well as for the two geographical regions. The fact that almost 90% of the South African power is produced in the eastern part of the country is reflected by the high correlation between the national emissions factor and the factor for the eastern region. The baseline for the western region is significantly lower due to the higher shares of nuclear and hydro sources in the western energy mix. The rise in the western part after 2010 is due to increasing shares of gas and coal-fired capacities.

Table 6-4. Estimated emission factors for South Africa: national, regional, and load-range level (gCO_2/kWh)

	2000	**2005**	**2010**	**2015**	**2020**	**2025**
Country-wide	844.17	857.39	876.02	825.35	812.18	795.68
Eastern Part	918.85	922.49	934.63	905.03	888.15	859.76
Western Part	229.39	228.65	227.71	390.42	466.9	465.03
Base load	829.0	852.1	876.1	815.1	793.3	796.6
Intermediate load	933.9	901.7	876.1	845.0	853.3	789.9
Peak load	1,025.4	869.3	876.1	877.0	876.7	825.1

Source: PROBASE, 2003.

If these regional multi-project baselines were officially applied to CDM projects in South Africa, project developers might have an incentive to implement projects in the eastern region because of its higher baseline emission factors and, consequently, the larger amount of credits to be earned. In case of energy efficiency or refurbishment measures, this would be a desired effect, but if the CDM project

aimed at meeting an increase in power demand in the western region of the country, the effect would be less desirable. After all, implementing the project in the western region would result in emission reduction credits calculated as a reduction below the relatively low western benchmark (*e.g.*, 228 gCO_2/kWh in 2005). Instead, implementing the project in the eastern region and transporting the electricity via the existing transmission system to the western region would result in reductions below the 'eastern baseline' (*e.g.*, 922 gCO_2/kWh in 2005). This large difference (about 60%) between the western and the eastern multi-project baselines and the existence of a transmission system between both regions could easily create a bias towards CDM investments in the eastern part of the country so that more emission reductions can be claimed (even if losses from the transmissions were included in the calculations as a leakage factor).

Generally, the use of regional baseline emission factors can be very useful as they provide an incentive for plant operators in regions with a high share of carbon-intensive plants to improve the performance of these plants or to implement cleaner technologies. Nevertheless, the example of the South African power system above shows that when the product (*e.g.*, electricity) can relatively easily be exchanged between regions, a regional approach to the calculation of multi-project baselines can cause politically and also environmentally questionable incentives as soon as a project intends to meet new energy demand.

6.5. Application of Multi-Project Baseline Methods in Practice

6.5.1. Multi-project baselines in the 'Marrakech Accords'

In the Marrakech Accords clear references have been included to standardising baselines for JI and CDM projects (as explained in Chapter 5). For example, the draft decision on JI stated that a baseline shall be established "[o]n a project-specific basis and/or using a multi-project emission factor" (UNFCCC, 2002b, pp. 18, Appendix B, criterion 1). Next to a clear reference to standardisation of baselines, it also indicated that applying a project-specific baseline methodology did not exclude standardisation of certain baseline parameters.

A strong reference to developing multi-project/standardised procedures for CDM baseline methodologies could be found in (UNFCCC, 2002b, pp. 46, Appendix C (b) (v)), which stated that the CDM Executive Board shall provide guidance on the "appropriate level of standardization of methodologies to allow a reasonable estimation of what would have occurred in the absence of a project activity wherever possible and appropriate." The latter was a clear reference to multi-project baselines. In addition, the CDM Executive Board should develop and recommend to the COP-MOP specific guidance on the "definition of project categories (*e.g.*, based on sector, sub sector, project type, technology, geographic area) that show common methodological characteristics for baseline setting" (UNFCCC, 2002b, pp. 46, Appendix C (b) (i)). Finally, COP-7 decided that the CDM-EB should explore the possibility of using "decision trees and other methodological tools, where appropriate, to guide choices in order to ensure that the most appropriate methodologies are selected, taking into account relevant circumstances" (UNFCCC, 2002b, pp. 46, Appendix C (b) (iv)).

An important question in the context of baseline standardisation is to what extent multi-project baselines matched with the three baseline approaches defined by the Marrakech Accords for the CDM (UNFCCC, 2002b, pp. 37, para.48). As has been mentioned in Chapter 5, this would not be a problem for the third baseline approach, which in fact already described a benchmark-type methodology. A multi-project baseline methodology under the first approach of 'Marrakech' (baselines derived from existing or historical emissions) could be derived from the historic or existing emissions of comparable project activities in the same category (*e.g.*, a particular sector). Any proposed CDM project would need to beat this sector-based emissions level to achieve emission reductions.

Applying multi-project baselines under this first approach, however, provided scope for quite a large range of baseline methodologies. For example, multi-project baselines could refer to:

- the average emissions for all fuels within a sector,
- the average emissions of a particular fuel technology within the sector, or
- technologies which have recently been added to the sector via new installations.

According to the second approach of 'Marrakech', baselines must represent an economically attractive course of action. A multi-project baseline methodology under this approach could determine for a sector within a host country, or for the host country as a whole, a reasonable projection of the development in the sector or the country, *i.e.* a development, which is economically attractive and not hampered by significant investment barriers.

Table 6-5 summarises the general applicability of multi-project baselines for JI and CDM projects with a view to the Marrakech Accords. From the table it can be concluded that multi-project baselines could be formulated for all the three baseline approaches of 'Marrakech'.

Table 6-5. Compatibility of multi-project baseline methods with Marrakech baseline approaches

'Marrakech' baseline approach	**Possible multi-project baseline method**
1. Existing actual or historical emissions	• Best available technologies - if recent or actual practice is considered as best available in the host country • Recent comparable investments during past, *e.g.*, 5 years or 2 years • Sector averages in a single country • Sector averages in a region, although link with project is weak
2. Emissions representing economically attractive course of action, taking into account investment barriers	• Economically most attractive investment, which is less stringent than economically attractive and needs an assessment of inefficiencies in the host country • Recent comparable investments, if these are considered representative for economically attractive course of action in the near future • Best available technologies, if 'best' is 'available' under economically attractive course of action • Energy-sector modelling with projections of the future energy mix based on cost-optimisation
3. Average similar activities in recent 5-year + top 20% threshold	• Better-than-average-current practice, including an explicit definition of how much better a project must be

Source: own compilation based on analysis in this section.

6.5.2. Multi-project methodology development by the CDM Executive Board

Next to the theoretical case studies explained above, during the preparation of the JI and CDM operationalisation between 2001 (COP-7) and 2008 (when the Kyoto Protocol commitment period started) there were also been practical examples of standardising baselines and baseline procedures for JI and CDM projects. In light of the baseline approaches included in the Marrakech Accords (see above), project developers could construct baseline methodologies to be approved by the CDM Executive Board (and later the JI Supervisory Committee[110]).

A further step towards standardisation was the approval of baseline methodologies by the CDM Executive Board (see Chapter 5). Once approved, a methodology can be used for multiple projects of the same type, which implies a form of standardisation. In the actual practice of the CDM, this led to a number of different methodologies approved for one project category. With an increasing number of approved methodologies, there could be a considerable variation in how emission baselines are determined for similar projects. This trend was observed in Ellis (2003) who categorised the baseline methodologies used in: 'operating margin' (the effect of a project on the operation of power plants on the grid), 'built margin' (the effect of a project in terms of delaying or avoiding the construction of

[110] As CDM projects could already generate emission reduction credits from the year 2000, most attention during 2001-2008 was paid to formulation and approval of CDM baseline methodologies. For JI projects, for which crediting could only start in 2008, the JI Supervisory Committee could largely consider CDM approved methodologies for JI Track-2 projects.

future power plants), and 'combined margin' types of baselines (a combination of operating and build margin).

However, even within these baseline categories different methods were used. For example, some methodologies identified within a particular host country a currently operating plant that would have been dispatched in case of newly added capacity. Other methods, instead, applied an operating margin method by taking a weighted average emission factor for the grid as a whole. In order to harmonise methodologies per project category, the CDM Executive Board decided to consolidate methodologies per category. In June 2004, the first two proposals for such consolidated methodologies were presented: for landfill gas project activities and for zero-emissions grid-connected electricity generation projects based on renewables. These consolidated methodologies would function as standardised baseline methodologies and could be used by all project developers proposing a project in the category concerned. As per November 2013, the Executive Board had approved 114 methodologies for large-scale CDM projects in different sectors, which were harmonised into 23 consolidated methodologies (UNFCCC (CDM), 2014). The advantages of consolidated methodologies were that project developers 'only' had to fill in the project or country-specific data in order to determine a project baseline, but also that it made validation of project plans more efficient; validators mainly had to check whether the methodology had been applied well and whether correct data had been used.

A considerable step further in the direction of baseline standardisation is the calculation of multi-project GHG emission reduction factors (*i.e.* benchmarks) for a particular project type in a particular host country. As has been argued above in this Chapter, this type of standardisation is most far-reaching as it reduces baseline determination to an effort of multiplying the project activity level within the project boundary (*e.g.*, number of kWh per year) with the benchmark emissions factor. An early example of such a benchmark application could be found in the Dutch ERUPT programme for JI projects, which offered a table with benchmark CO_2 emission factors for electricity sector projects in each Central and Eastern European country (Ministry of Economic Affairs of the Netherlands, 2001).

The process of standardising baselines and baseline procedures applied during the start-up phase of the CDM and later JI (2001 – 2008) was primarily a bottom up exercise with standards being developed based on a number of individual project baselines (Ellis, 2000) (Gaast, 2005) (Matsuo, 2000). At the 'Conference on Baseline Standardisation' held in Groningen in November 2003, for example, suggestions to establish a procedure under the auspices of the CDM Executive Board for the calculation of baseline default emission factors for CDM projects, next to the standardisation trend in terms of approval of methodologies by the CDM Executive Board, was considered undesirable if not unfeasible. Participants felt that standardisation could better be dealt with through experience with actual projects and their individual baselines than through academic exercises (Gaast, 2003a) (Jepma & Gaast, 2004). Much later, at its 68th meeting (July 2012), the CDM Executive Board developed a 'Procedure for the Submission and Consideration of Standardized Baselines' (CDM - Executive Board, 2012). According to this more top-down approach, a host country's designated national CDM authority (DNA) could submit a proposed standardised baseline for projects in its country, for approval by the Executive Board. In this procedure, the DNA was the official channel for submission of the standardised baseline, which could be proposed by "Parties, project participants, international industry organisations or admitted observer organizations" (CDM - Executive Board, 2012).

The several steps towards baseline standardisation by the COP, the CDM Executive Board, project developers and the example of the Netherlands ERUPT programme are described in further detail below.

6.5.3. Early experiences with baseline standardisation: the Dutch JI and CDM tenders

Under the Kyoto Protocol, the Netherlands adopted a commitment to reduce its GHG emissions during 2008-2012 by 6% below its emissions level of 1990. As per Cabinet Decision in 1999, half of this abatement effort should be carried out domestically, while for the other half JI credits (one-third: 34 Mt) and CDM credits (two-thirds: 66 Mt) could be acquired (JIN, 1999a) (JIN, 1999b). In 2000, the Netherlands Ministry of Economic Affairs launched a tender programme for JI projects, called ERUPT (Emission Reduction Units Procurement Tender) (JIN, 2000f). Through the tender, managed by the government agency SenterNovem, Dutch and international project developers could propose JI project ideas and the best ones were selected for submission of detailed project design documents (including a business plan for the underlying investment). Out of these detailed project proposals a final selection was made of projects to be contracted.

The first tender resulted in eight projects in Romania (4), Poland, Czech Republic, Hungary, and Slovakia. For the 8 Mt CO_2-eq. emission reductions from these projects the Netherlands Government paid about € 50 m upon delivery of the credits. As per January 2005, ERUPT had completed five tenders with 23 projects and a contracted amount of emission reductions of 16 Mt CO_2-eq (CE, 2005). After 2005, the tender programme was changed into a more flexible programme where project developers could submit projects without the need to wait for tender publications (JIN, 2005). For this, a specialised Government agency, called CarbonCredits.nl, was established. In total, the Netherlands (both public and private sector buyers) invested in 200 JI projects (133 Track-1 and 67 Track-2; as per November 2014) (Fenhamm, 2014). These projects have both served the Dutch efforts to comply with its Kyoto Protocol commitments and supported Dutch installations to comply with their commitments under the EU emissions trading scheme, for which, as of 2008, also JI project credits could be used (European Parliament and the Council, 2004).

Together with the World Bank's Prototype Carbon Fund (PCF), which started more or less at the same time and in which the Netherlands Government also participated as an investor, ERUPT faced the challenge of translating the Kyoto Protocol into detailed modalities and procedures for the project cycle of JI (note that the Netherlands initiated ERUPT about a year and a half before launching a similar tender for the CDM, called CERUPT), without the guidance of the Marrakech Accords, which became available only in November 2001. For this purpose, a detailed Guidelines document was prepared, which explained project developers how to determine a baseline and how to deal with other JI accounting issues (Ministry of Housing, Spatial Planning and Environment of the Netherlands, 2001). After the first ERUPT round, these Guidelines were reviewed based on the experiences of project developers and auditors who had to validate the project design documents (Ministry of Economic Affairs of the Netherlands, 2004).

The ERUPT Guidelines document and its revised version were an important step in the direction of standardising procedures for baseline determination because all project developers proposing projects to ERUPT had to use the same methodology. This procedure was based on the so-called key-factor

approach which took the recent past and current situation in the project area as a starting point and required project developers to carry out an analysis of relevant key factors such as national energy policies in the host country, energy market development, energy subsidy policies, international commitments, *etc.* (Ministry of Economic Affairs of the Netherlands, 2004).

Next to the standardised key-factor approach, the revised ERUPT Guidelines also standardised particular parameters of baseline determination, such as the definition of the project boundary, *i.e.* which emission sources to include in the baseline, and defining the additionality concept. In addition, the revised Guidelines contained multi-project baseline/benchmark values for the electricity sector in potential JI host countries in Central and Eastern Europe. The use of these benchmarks under ERUPT was optional; project developers who felt that the benchmark value did not reasonably represent their specific project's business-as-usual situation, were free to develop their own baseline emission factors, provided that they used the ERUPT key-factor approach.

When calculating these benchmarks, the following key issues had to be dealt with:

- How to deal with low variable cost power capacity? Since power plants that operate at relatively low variable costs are usually operated as many hours as possible, they are unlikely to be dispatched when new power production capacity becomes available. Examples of such capacity are run-of-river hydropower, co-generation and nuclear power plants.
- How to incorporate the EU pre-Accession process of Central and Eastern European countries into the benchmark calculation? Potential JI host countries who had become Candidate members of the EU had to incorporate EU standards (collected in the *Acquis Communautaire*) in their domestic laws, but by the time of calculating the ERUPT multi-project baseline carbon emission factors (2001), negotiations between the European Commission and the countries that were scheduled to become EU member state in May 2004 had not yet made clear to what extent these countries would be allowed a transition period to postpone incorporating the standards until after the accession date (countries such as Bulgaria and Romania had not yet begun pre-accession negotiations with EU).

The starting point for calculating the ERUPT benchmarks for JI electricity production projects was the existing energy grid mix in each of the potential JI host countries in Central and Eastern Europe (Ministry of Economic Affairs of the Netherlands, 2004, p. 38). By doing so, it was assumed that new power production capacity connected to the grid through a JI project would replace existing grid-connected capacity. Moreover, capacity with relatively low operational costs were not included in the baseline as they were unlikely to be stopped due to a new JI project. Moreover, the ERUPT methodology assumed that, in case of new capacity, technologies with relatively high variable costs, such as oil and gas, would be dispatched from the system before coal technologies. Finally, with a view to the EU pre-accession process ERUPT assumed a linear trend from actual standards to EU Best Available Techniques. Box 6-3 shows, using the example of Bulgaria, how the availability of new information during later years have led to different insights into benchmarks.

Box 6-3. JI benchmarks for Bulgaria

The ERUPT methodology resulted in a benchmark carbon emission factor for the Bulgarian electricity grid of 814 gCO_2/kWh in 2005 and 689 gCO_2/kWh in 2012. In the meantime, Bulgaria had entered into negotiations with the European Commission on the future membership of the country of the EU, which resulted into specific information about the Bulgarian pre-accession process. For the power sector, an important implication of the pre-accession process was that four nuclear units in Bulgaria would have to be terminated. According to the Bulgarian National Communication to the UNFCCC (Republic of Bulgaria, 2002), these plants would be replaced with lignite/coal and natural gas-based technologies. This development would imply an increase in the carbon intensity of the power grid, so that updated multi-project baseline emission factors for JI projects in the Bulgarian power sector became higher than the ERUPT factors: 1.19 gCO_2/kWh in 2005 and 1.08 gCO_2/kWh in 2012 (Gaast, 2005).

The CERUPT programme, which was launched in 2001 and which was limited to one tender round only, did not contain benchmark emission values for power sector baselines. Nevertheless, the projects that were selected by CERUPT largely used methodologies that strongly resembled multi-project baseline calculations. CERUPT contracted 18 CDM project proposals, of which 12 projects aimed at building renewable energy capacity to be connected to the electricity grid of the host country (Ministry of Foreign Affairs of the Netherlands, 2008). The baselines for the latter projects were calculated by identifying the marginal capacity connected or planned to be added to the grid. Therefore, the baseline analysis took place at a higher aggregation level than the project itself, which is generally also the case with multi-project baselines. Table 6-6 shows for these 12 projects how the project participants used multi-project baseline elements in their project design.

Table 6-6. Multi-project baseline elements in CERUPT projects

Project	Multi-project baseline element
1. Penas Blancas, Costa Rica	Optimising dispatch model for the power sector
2. Wigton Wind farm, Jamaica	Determining energy mix connected to the electricity grid
3. Hydroelectricity power station Fortuna, Panama	Determining energy mix of thermal plants that are likely to appear in the margin (no hydro)
4. Tamil Nadu wind power, India	Aggregation to level of State grid (but no extension to other grids from where imports take place)
5. Vestas RRB India Ltd wind power, India	Baseline derived from national policy plans, adjusted for region-specific circumstances
6. AyP Sucre hydro plant, Bolivia	Power sector for entire Bolivia
7. HFR geothermal energy project, El Salvador	Standardised baseline emission factors given in CERUPT guidelines
8. Esti run-of-river hydropower project, Panama	Multi-project baseline based on national generation expansion plan
9. Bayano hydropower project, Panama	Multi-project baseline based on national generation expansion plan
10. Huitengxile wind farm, China	Aggregation for the entire North China power grid, assuming increasing share gas-fired plants
11. Gangangar biomass project, Rajasthan, India	Regional aggregation to state level, northern grid level was not appropriate
12. Ind-Barath Energies 7.5 MW biomass power plant, Maharashtra, India	Regional aggregation to state level, example of application of built-margin baseline concept

Source: compiled by author from (UNFCCC, 2014d).

6.5.4. Standardisation of baselines for JI Track-1 projects

As explained in Chapter 5, the Marrakech Accords made a distinction between JI Track-1 and -2 projects.[111] Under Track-1, the emission reductions achieved through a JI project can be verified by the host country, without the need for external validation and verification of the project plan and outcomes (UNFCCC, 2002b, pp. 11-13, para.20-23).[112] At workshops held in 2005 on JI Track-1 cooperation (Sofia, April 2005; Prague, September 2005), it was noted that, in comparison with JI Track-2, Track-1 cooperation could be relatively simple (Gaast, 2005). For instance, the accounting of GHG emission reductions achieved through the project can take place through bilaterally agreed procedures, because possible miscalculations of GHG reductions at the project level will become visible in the national GHG inventories of the host countries. This provides a larger scope for simplification of procedures, including those on baselines and additionality (see Chapter 5).

[111] Note that 'Track-1' and 'Track-2' are not official terms used in the Marrakech Accords, but are informal terms for the two tracks used during negotiations (see also chapter 5).

[112] Countries that do not meet the eligibility criteria for Track-1, as listed in the Articles 5 and 7 of the Kyoto Protocol, must use the Track-2 procedure, which includes an external, independent validation of the project design document and an independent verification of the emission reductions achieved, similar to CDM processes.

On the other hand, precisely because of the EU membership of most of the potential JI Track-1 host countries, the scope for potential projects under Track-1 strongly decreased. After all, several GHG emission reduction activities that could have been carried out under JI, became mandatory as part of the EU accession and through participation in the EU emissions trading scheme (ETS). With a view to the above, the largest scope for JI Track-1 projects remained in those areas which are not covered by the ETS, *i.e.* energy efficiency in built environment, transport, combined heat and power, agriculture and industrial waste management. Given the need to establish simplified procedures for JI Track-1 expressed at the aforementioned workshops, it has been explored, as part of a study project conducted for the Netherlands Ministry of Economic Affairs (Gaast, 2005), how baseline procedures could be standardised for projects in these categories. These procedures are summarised below.

Built environment

Standardising baselines for the built environment is generally considered very difficult as each building is unique in terms of a combination of building materials used, design, use of the building, maintenance, *etc*. A first step in the standardisation process could be the assumption that buildings are generally built to governmental regulations and no further (Begg, et al., 2002b). Second, an assumption must be made on the extent to which compliance with the regulations has taken place, which may differ from country to country. Third, governments may (have to) formulate improvements in the built environment, either through domestic policies or through EU pre-accession processes.

Moreover, in the built environment a distinction can be made between residential and non-residential buildings. For example, a JI project could aim at improving the energy performance of a particular type of dwellings, *e.g.*, mass residential buildings built in Sofia, Bulgaria, from the 1970s and 1980s with prefabricated walls, floors, roofs, bad thermal insulation, and the owner being also the occupant. A possible multi-project baseline could be derived from the energy performance of the dwellings on a default site. Meanwhile, the largest scope for multi-project baselines seemed to exist in the non-residential sector, *e.g.*, offices, schools/universities, hospitals, hotels, warehouses, and libraries (Begg, et al., 2002b).

Baseline parameters for multi-project baselines in the built environment that need to be taken into consideration are:

- Project type: In case a project constructs a new building thereby replacing an existing one, the multi-project baseline is generally based on the performance of the old building. In case the building replaces an otherwise planned building, the baseline is the energy performance of the planned new types of building. Finally, a project could aim at refurbishing an existing building, the baseline of which would again be the energy performance of the existing building, adjusted for planned improvements.
- Elemental or whole-building method: A project could aim at improving a particular building element, *e.g.*, heating, equipment used, cooling, lightning, and ventilation. A multi-project baseline could describe the present and expected energy performance of the element under consideration. For example, a JI project could aim at setting a national standard for air conditioning in a country. The baseline for such a sector-policy project would be the present average standard of air conditioning, adjusted for expected improvements under business-as-usual circumstances. The baseline could be determined by taking a representative sample of present air

conditioners in the country. A whole-building multi-project baseline determines a fixed emission factor per, *e.g.*, m^2 for schools, hospitals, office buildings, *etc*.

- Owner/occupier/tenant: It makes quite a difference whether the owner of a building is also the occupier or manager, or not. Simply put, when the owner must also pay the energy bill, he/she may have a stronger incentive to carry out energy saving measures than in case the lower energy bills go to the occupier/tenant.

Given the complexity of the accounting (including monitoring) of GHG emission reductions from built environment projects, it has been argued that JI/CDM projects in this category could better be designed at the level of sector policies (*i.e.* a policy results in GHG emission reduction in the built environment sector) than at the level of each building separately (Bossi & Ellis, 2005) (Sterk & Wittneben, 2006). In this context, a multi-project baseline covering the sector could be derived from a sample of building elements or buildings, but also the project monitoring could be streamlined by taking samples and monitor their performance.

Transport

Possible GHG emission reduction projects in the transport sector are:

- Modal shift: *e.g.*, lorries to canal, car commutation to public transport, *etc.*
- Fuel substitution: *e.g.*, from diesel to compressed natural gas.
- Fuel efficiency: *e.g.*, filters for reduction of particulates emissions.
- Driver behaviour and vehicle maintenance: *e.g.*, through training programmes.

When determining a multi-project baseline for transport sector JI projects, a clear vision is needed of future transport sector developments in the host country (Ellis, et al., 2001, pp. 21-24). For instance (Begg, et al., 2002b):

- It is widely assumed that small operators under business-as-usual circumstances have no incentive to adjust their operations, as they generally face tight margins and need to keep afloat on a daily basis.
- The host country may have a plan to introduce road haulage charges or set vehicle standards, which would need to be included in the baseline.
- In JI Track-I host countries that have acceded the EU or will do so at short notice, EU standards will need to be incorporated in domestic law. These standards would, depending on the timetables agreed with the European Commission, need to be included in the baselines.

Similar to the conclusion on the built environment sector, especially with a view to simplification of project monitoring, JI would better involve transport sector policies, such as green transport plans, fuel economy programmes, vehicle emission standards, smart growth programmes, *etc*., than individual projects covering, *e.g.*, a company fleet (Begg, et al., 2002b). JI accounting procedures would subsequently focus on the estimated abatement effect of such policies, which implies multi-project baselines at the sector level and sample-based monitoring.

A multi-project baseline for the transportation sector could be expressed as the average annual fuel consumption for vehicle types, *e.g.*, lorries. For such calculations, IPCC methodologies used for the UNFCCC National Communications could be applied (UNFCCC, 2014e). In a more advanced manner, spreadsheet models can be used to estimate how employees of a particular organisation go to

work, *e.g.*, for organisations with approximately 1000 employees within a particular region. Such spreadsheets would deliver a baseline emissions factor in terms of CO_2 per passenger-km. In the UK, such a spreadsheet model has been developed by Napier University (Begg, et al., 2002b).

Combined heat and power (CHP)

In this category, an early project example was a rapeseed plant which was reconstructed into a plant with CHP in the town of Namyslów (Poland) (Mizuho Information & Research Institute, 2004). The power component of the CHP replaced power that would otherwise have been purchased from the grid, whereas the heat was sold to individual customers who were not connected to a district-heating grid. In this project example, the power component was standardised by taking a grid-based GHG emission factor; the heat component baseline was project-specific.

Another example of an industrial CHP project was the Metrogas CDM activity, which was implementated in a food factory in Chile. Before the CDM project, the factory purchased the power from the grid, whereas it used natural gas for the production of heat. After the project, both power and heat would be produced through natural gas. The baseline for the electricity generation component was calculated by taking an emission factor for the entire grid (which resembles a multi-project baseline factor). For the baseline of the project's heat component the emission coefficient of the pre-project industrial boiler was used.

These two examples show that the baselines for the power component of CHP projects can be relatively easily standardised, as in many cases the power used to be purchased from the grid. The scope for standardising baselines for the heat component, however, depends on how the heat was produced before the project, *i.e.* grid-connected or individually within buildings (*e.g.*, using gas, oil, coal, or wood).

Industrial waste management

An early example of an industrial waste management JI project was the Paper Factory Stambolijski in Bulgaria, which used wood waste from paper production as a fuel for electricity (Paper Factory Stambolijski, 2004). In the baseline it was assumed that under business-as-usual circumstances, clearing of wood waste in existing landfills would be allowed at least up to 2013. The reason for this assumption was that the waste from the factory was classified by the Bulgarian regulations around 2005 as non-hazardous (Paper Factory Stambolijski, 2004) (Gaast, 2005) (Gaast, 2003b). According to the *EU Directive on Landfilling of Waste* (Council of the European Union, 1999), the activities foreseen under the project would have to be carried out anyway (assuming that Bulgaria becomes EU member state in 2007), but Bulgaria had agreed with the European Commission that this Directive would not have to be implemented in the country before 2012. Consequently, the baseline for the electricity from the biomass component referred to the power that would otherwise have been purchased from the grid. For this component, the ERUPT multi-project baseline emission factors have been used (see Section 6.5.3).

The baseline component for the methane reduction part of the project was more complex, but it was standardised by using a spreadsheet model with default values from literature, IPCC and CDM

experience (Paper Factory Stambolijski, 2004). This model took into consideration the possible differences between landfills in terms of waste composition, oxidation of gas, *etc*.

In conclusion, standardisation of baselines for JI Track-1 projects not only had the potential to reduce transaction costs for projects and increase transparency of baseline procedures, it could also stimulate JI activities in the built environment and transport sector, which were likely to have a sector-based policy, rather than a project-by-project character.

6.5.5. Standardising JI power sector baseline using EU ETS verified data

As an example of what a standardised baseline for JI Track-1 looks like and how the countries involved collaborated on this, this section describes the case of the 'Hidroelectrica Hydropower Development Portfolio Track 1 JI Project' implemented in Romania between 2009 and 2012.[113] This project was the first JI Project which was approved under the Romanian Track-1 procedures. The ERUs originating from this project were purchased by the Netherlands Government. A special feature of this project was that its baseline is determined on an *ex post* basis, thereby using verified CO_2 emissions data of Romanian electricity generating installations covered by the EU ETS. Since 2008, Romanian installations have received annual GHG emission allowances under the EU ETS and by the end of each year they need to show that their actual emissions are below or equal to their allowances. As these emissions are monitored and verified according to EU ETS standards, it can be precisely calculated how many GHGs are emitted by, *e.g.*, Romanian power plants for producing electricity (expressed in gCO_2/kWh). For this JI Track-1 project, these carbon emission factors were used in the baseline calculations.

The project aimed at developing nine new hydropower plants, which were located in different hydrographic basins in Romania. The project started in 2008 with the construction of the first plants with completion scheduled for 2011. The project design document was prepared in 2008 and in 2009, the Government of Romania issued a letter of approval for the project. The project envisaged the installation of 278.4 MW hydropower capacity, which was estimated to be 5.18% of Romania's total hydro-based electricity capacity (equivalent to 1.3% of Romania's annual electricity output).

The project was carried out under the Romanian Track-1 procedures (based on the Ministerial order No. 297 dated 21 March 2008, Romanian Ministry of Environment). Romania has been a Party to the UNFCCC since 1994 and it ratified the Kyoto Protocol in 2001. Under the Kyoto Protocol, Romania had a commitment to reduce its GHG emissions by 8% below its 1989 level during the period 2008-2012. According to Romania's National Communication to the UNFCCC of 2006, the country's GHG emissions in 2004 were approximately 33% below the Kyoto Protocol target (this report was updated in 2013, (Ministry of Environment and Climate Change of Romania, 2013)). Table 6-7 below shows the share of different energy technologies in Romania's electricity production for the years 2004-2007.

[113] The author of this study acted as consultant to this project and wrote the Project Design Document for approval by the Government of Romania (during May 2008-February 2009) (Hydroelectrica, 2009). This section is based on the analysis carried out for the preparation of this Project Design Document.

Table 6-7. Shares in Romania's grid-connected electricity production of power production technologies (%)

	2004	2005	2006	2007
Coal	37.55	35.80	39.57	41.69
Hydropower	31.61	37.10	32.02	25.80
Natural gas	16.01	14.07	16.69	17.42
Nuclear energy	10.07	9.57	9.20	13.10
Crude oil & petroleum	3.26	2.68	1.83	1.11
Conventional fuels	1,50	0.75	0.68	0.89

Source: Annual report Romanian Energy Regulatory Authority ANRE - 'Date Statistice Aferente Energiei Electrice' (Hydroelectrica, 2009).

From the table it becomes clear that during the period 2004-2007 the variation in hydropower (largely weather-related) was mainly covered by adjustments in the production of coal and natural gas-based electricity. This fossil fuel-based production capacity has therefore been functioning at the margin of increasing production when hydropower output was lower and of reducing production when hydropower output was higher. Since 2007, Romania's nuclear power capacity has increased by 700 MW to 1400 MW so that as of 2008 approximately 20% of Romania's grid-based electricity would be nuclear based.

Romania was an active country in terms of JI collaboration. It signed 10 Memoranda of Understanding on JI cooperation with JI investor countries: Austria, Denmark, France, the Netherlands, Norway, Sweden, Switzerland, Italy, Finland, and World Bank. As per November 2014, 21 JI projects were in the pipeline (at validation or registered by the JI Supervisory Committee), of which 4 projects counted as JI Track-2 (Fenhamm, 2014).

The following units were covered by the Hidroelectrica Hydropower Development Portfolio Track 1 JI Project:

- Dumitra hydropower project (HPP),
- Bumbesi HPP,
- Nehoiasu HPP,
- Firiza I + II HPP,
- Râul Alb HPP,
- Plopi HPP,
- Racovita HPP,
- Rastolita HPP, and
- Robesti HPP.

These units, with the exception of Dumitra and Bumbesti HPPs, which were approved by a Governmental Decree in 2003, were all initially approved by the Government of Romania during the 1980s. However, the actual development of the investment and construction works took place at a very slow speed if they had not just been stopped. Through the JI project, the construction of the nine hydropower units could be accelerated during the period 2009-2011.

From a national energy perspective, such as reflected by Romania's latest national energy strategy, further expansion of the hydropower capacity could be expected for the future. However, with the increase (doubling) of the nuclear power capacity and the flexibility in the output expansion (and reduction) of coal and natural gas-fired power plants (thermal plants on average operate at around 57% of their full capacity) no strong short-term incentive existed for Hidroelectrica to increase its hydropower capacity.

With respect to baseline determination, the project belongs to the category of greenfield projects which create new capacity on sites where formerly no power production took place. In order to determine a baseline emissions scenario for this project, an average CO_2 emission factor (expressed in gCO_2/kWh) was calculated for the power grid of Romania. However, contrary to the ACM0002 methodology that is usually used for similar projects under the CDM (UNFCCC (CDM), 2014), for this project the baseline emission factor was calculated on an *ex post* basis using data verified for Romanian electricity generation installations covered by the EU ETS.

The reason for using of Romanian ETS installations' data for the baseline calculations was that these installations produce power mainly with fossil fuel combustion (that is the reason why they have been included in the ETS in the first place). It is common practice that a country's power production capacity is as big as the highest annual peak in electricity demand, so that throughout the year there is excess capacity. Power plants are operated in different modes with nuclear energy and run-of-river hydropower plants normally being operational as many hours as possible because of their relatively low operational costs. Fossil fuel based plants, instead, are usually modulated depending on electricity demand developments while securing electricity supply. For the latter plants, it could generally be assumed that the higher the fuel costs and the lower the energy efficiency, the higher will be their variable costs and, therefore, it will be more attractive to reduce their operation when new capacity becomes available.

One further specific aspect that needed to be considered in this baseline methodology was how to deal with CO_2 emissions that originate from CHP or co-generation plants. Within the context of Romania, most CHP plants are used for district heating (SAVE II PROCHP, 2003). Until 2002, heat was mainly produced by district heating and CHP plants owned by Termoelectrica. As part of the liberalisation of the Romanian energy market, several Termoelectrica district heating and CHP plants became independent, with in many cases the municipality as single shareholder (Hydroelectrica, 2009). The complexity with CHP plants is that when, irrespective of the reason for it, a plant delivered less electricity to the grid, there is still a heat demand that needs to be met. A typical CHP plant produces heat for baseload heat demand (*e.g.*, hot water during the summer), so that additional heat-only boilers are needed for meeting peak-load heat demand. Should a CHP plant's delivery of electricity to the grid be reduced and in combination with that the heat production reduced, then extra heat needs to be produced elsewhere in order to be able to meet the municipality's baseload heat demand, which would still cause emissions of CO_2.Therefore, calculating CO_2 emissions in terms of kWh of electricity produced and including this emission factor in the baseline would not be a conservative approach. With a view to the above, CHP plants with a preferential status in the dispatch order (by Energy Efficiency law–no. 199/2000, CHP for district heating had guaranteed access to the grid) were left out of the baseline as they are unlikely to become marginal plants due to a JI project.

For the calculation of such a modified (*i.e*. based on marginal technologies) grid-connected CO_2 baseline emission factor, the following data were needed:

- The verified CO_2 emissions data of Romanian power sector installations in the ETS that operate at the margin. These data are published on the published on the Internet site of Romanian Ministry of the Environment (between 1 May and 30 June of the following year) and are freely accessible (European Union, 2014).
- Annual electricity supply to the grid by each of the ETS installations operating at the margin.

Combining these two data sources results in an annual baseline emission factor, which is made publicly available by the Romanian Ministry of the Environment. For this annual *ex post* calculation, a 'CO_2 Emission Factor Data Collection Protocol' was developed which establishes a working relationship with National Environmental Agency (NEPA) and the Romanian Energy Regulatory Authority (ANRE) under the coordination of the Ministry of the Environment and the Ministry of Economy and Finance. The first year for which the baseline was prepared was 2009 based on data that became available during the first six months of 2010.

6.6. Discussion: Negotiations on Standardised Baselines in Light of Design, Process and Tactics Conditions

The central theme in the application of multi-project standardised baselines to JI and CDM projects is to find a balance between:

1. the requirement in the 'Marrakech Accords' that baselines must be project-specific and reasonably describe what would occur in absence of a JI/CDM project, and
2. the desire to simplify baseline procedures with a view to reducing transaction costs and improving the transparency of procedures.

In this chapter, development of multi-project baselines describing reference scenarios for JI and CDM has been discussed by looking at its political context (Kyoto Protocol Articles 6 and 12 and the 'Marrakech Accords'), research conducted on possible methodological approaches for multi-project baselines (modelling, determining operating and built margins, *etc*.), early practice in JI and CDM investment programmes and the work of the CDM Executive Board and JI Supervisory Committee. In this section, the development of multi-project procedures during 2001 and, around, 2010, is assessed against the three basic negotiation conditions in terms of:

1. whether the design of the multi-project baseline procedures reflect the above requirement of reasonable baseline descriptions while reducing transaction costs and enhancing transparency (basic condition 1),
2. whether the negotiation process has enabled reflection of all these aspects during the baseline procedure formulation work (basic condition 2), and
3. whether there have been tactical and facilitating aspects to enable negotiations to work toward environmentally integer and cost-effective baseline procedures (basic condition 3).

Meeting basic condition 1: environmentally integer and pragmatic multi-project baseline designs

As has been explained in this chapter, a baseline describing a GHG emissions reference scenario for JI and CDM projects can either be:

- derived from past or present data relevant for the project, thereby assuming that what has been taking place so far would continue to take place in the (near) future; or
- based on forward looking data assuming that past or present data are insufficiently representative for the future, *e.g.*, because of an expected/announced political change such as the EU accession in Central and Eastern Europe; or
- a benchmark-type of baseline with a performance level in terms of GHG emissions.

The 'ideal' baseline (situation A in Figure 1-3) would both be a reasonable representation of a project's reference scenario which would be affordable for a wide range of small- and large-scale projects globally and which would avoid 'talking up' the achieved GHG emission reductions. As this chapter and Chapter 5 have shown, such an ideal situation is difficult to achieve with JI and CDM baselines as the reference situation can usually not be controlled, as it is hypothetical. Efforts to deal with this through strict and costly baseline methods could therefore reduce the interest in JI and CDM projects (hypothetical situation B in Figure 1-3).

Through multi-project baselines, generalised estimates of baseline emission factors can be made, at relatively low costs and with a reduced scope for 'gaming' (unreal emission reductions by overstating baseline emission levels). However, multi-project baselines are usually less specific description of a project's context and could provide a larger scope for free riding or non-additional project activities as each project with emissions lower than the baseline emissions could claim carbon credits, irrespective of whether the project was already planned or triggered by JI or CDM revenues (hypothetical outcome C in Figure 1-3). It has been shown in this chapter that in the practice of the CDM (and later JI) this issue has been addressed by adding additionality tests to each project, in order to test whether the CDM or JI revenues was decisive for moving on with the project (towards hypothetical outcome D in Figure 1-3), thereby meeting basic condition 1. The outcome of the negotiations on multi-project baselines has also provided a larger scope for, for instance, the transport and built environment sectors, where small-scale project activities generally benefit from standardised baseline procedures with default GHG emission factors (enhancing a move towards outcome D in Figure 1-3).

Meeting basic condition 2: enabling negotiation process for multi-project baselines

The main negotiation framework for JI and CDM project baselines was formed by the CDM Executive Board and JI Supervisory Committee which became responsible for supervising the operationalisation of JI and CDM projects and processes. The baselines themselves were determined by project developers. They had to develop an accounting methodology for GHG emission baselines and monitoring of project emissions during the project lifetime. These methodologies had to be submitted to the CDM Executive Board (and JI Supervisory Committee), which checked methodologies with help of experts and practitioners (CDM MethPanels). After a while, the CDM Executive Board began consolidating methodologies which had been approved for similar projects, so that these became standardised methodologies for these project categories. For small-scale projects, the CDM Executive

Board developed, in addition to that, standardised emission factors for baselines. All these activities took place largely outside the political scope of the COP.

The main enabling aspect of the negotiations process for engaging with Parties and stakeholders on the elements identified for meeting basic condition 1 for multi-project baselines, has been the frequent interactions between CDM Executive Board (and JI Supervisory Committee) members, JI and CDM project practitioners, JI and CDM investor and host countries and knowledge institutes. For several decisive steps, the Executive Board and Supervisory Committee relied on research on calculating multi-project baseline emission factors for different country contexts and project types, as well as hands-on experience of JI and CDM practitioners (and Parties) with balancing the requirement of reasonable baselines and the desire to keep baseline determination reliable and cost-effective. Therefore, from this chapter, it can be concluded that during the process of developing multi-project baseline procedures for JI and CDM projects, basic condition 2 could only be met by enabling collaboration between members of the 'political' bodies CDM Executive Board and JI Supervisory Committee and researchers and JI and CDM practitioners.

Meeting basic condition 3: tactical aspects shaping multi-project baseline development

During the development of multi-project baseline determination, basic condition 3 was met due to the following tactical aspects which broadened the knowledge base for multi-project baseline development:

- Fundamental research on baseline standardisation, with a view to increasing environmental integrity and making processes cheaper and transparent (Kartha, et al., 2004) (Ellis, et al., 2001) (PROBASE, 2003), demonstrated what was methodologically possible, what were data needs, what were uncertainties and how to mitigate these, and how to arrange responsibilities in terms of methodology development, validation of its planned application and verification of its use. With these insights and case study analysis, it could be demonstrated that multi-project baselines would not necessarily imply lower integrity, but could actually reduce gaming and free ridership.
- Work done by early movers with JI and CDM, such as the World Bank Prototype Carbon Fund and the Dutch ERUPT and CERUPT programmes, was important for later baseline methodology work by the CDM Executive Board and JI Supervisory Committee. As these programmes started before the 'Marrakech Accords' in 2001, they had to formulate guidance for project developers largely from scratch, including baseline guidelines. Several of the elements in these programmes have later been used for JI and CDM approved (multi-project) baseline and monitoring methodologies.
- The step made by the CDM Executive Board to make a distinction between operating margin and built margin capacity was an important facilitating step in developing multi-project baseline methodologies for greenfield projects, thereby stimulating CDM projects in the area of renewable energy. By this step it was acknowledged that not being able to identify what capacity a greenfield project replaces is not necessarily an obstacle for making reasonable estimates of marginal grid-connected capacity.
- The linking of the CDM and JI to the EU ETS triggered demand from EU installations for JI and CDM credits. This created a stronger liquidity in the CDM and JI markets which accelerated the

development of baseline and monitoring methodologies, including the process to consolidate these towards multi-project application.

The above-discussed design, policy process and tactical/facilitating aspects of multi-project baseline development under JI and CDM have been summarised in Table 6-8.

Table 6-8. Design, process and tactical/facilitating negotiation aspects of developing multi-project baseline methodologies for JI and CDM projects

	Description of basic condition in negotiation file	Extent to which basic condition was met
1. Design of policy (instrument)	*Scope*: • Multi-project baselines can be applied to multiple projects within the same category *Principles*: • Multi-project baselines must be reasonable representation of the situation replaced by a JI or CDM project *Goals*: • Increased transparency • Avoid non-additional GHG emission reductions • Reduction of project design costs *Means*: • Standardisation of baselines via multi-project methodologies and/or standardised carbon emission factors (*e.g.*, performance benchmarks)	(+) Multi-project baseline methods were accepted for CDM and JI project, thereby acknowledging that not 'everything can be measured' but realising that too detailed and complex methods would become too costly. This created a larger scope for CDM and JI projects, also in transport and built environment, as well as for small-scale projects
2. Enabling negotiation process	*Meetings*: • COP-7 (Marrakech) set principles for project modalities • SBSTA focussed on technical process with baselines and other accounting issues • CDM Executive Board approved CDM project baseline methodologies and, later, consolidate these into multi-project baselines *Strategy*: • The process of consolidating baseline standardisation was mainly left to the CDM Executive Board • COP monitored this process from a distance *Responsibility:* • CDM Executive Board became responsible for approving CDM project baseline and additionality methodologies • This was later followed by the JI Supervisory Committee for JI methodologies • COP's responsibility was to set principles and boundaries	(+) The negotiation process enabled a frequent interaction with and feedback from research projects, project practitioners and investors on multi-project baseline development
3. Decisive tactics and facilitation	• Research projects such as Kartha et al. (2002) and PROBASE (2003) provided important insights on methods, tools and contexts for multi-project baselines • Early movers such as the World Bank's Prototype Carbon Fund and the Dutch ERUPT and CERUPT carbon credit purchase programmes developed first multi-project baseline determination practice • The step of the CDM Executive Board to distinguish between operating and built margin baseline installations supported development of multi-project baseline methodologies for greenfield projects	(+) Research on multi-project baselines underlined that these contribute to JI and CDM integrity (+) Early JI and CDM investors established ground work for multi-project baselines (+) Operating and built margin baseline distinction stimulated greenfield renewable electricity projects in developing countries (+) Demand for JI and CDM projects from EU ETS stimulated baseline methodology progress

Chapter 7. Towards a Future Climate Policy – Linking Climate and Development

7.1. Introduction: Aligning Climate Policies with Development Policies

In Chapters 3 through 6 above, four negotiation files have been discussed that each have played a role in shaping the UNFCCC and the Kyoto Protocol. For each file it has been analysed whether and to what extent each of the three basic or least required negotiation conditions, identified in this study, have been met. From the files discussed in Chapters 3-6 it has become clear that a critical factor during the negotiations has been the division of responsibilities between developed and developing countries. According to Depledge & Yamin (2009), the division between industrialised and developing countries is the greatest weakness within the international climate change regime.

In Chapter 2, but also after the entry-into-force of the Kyoto Protocol, the question was therefore raised whether GHG emission reduction measures would actually need a global support as only relatively few countries are responsible for most of the global GHG emissions (Victor, 2006) (Victor, 2007) (Prins & Rayner, 2007) (Haas, 2008) (WRI, 2009). At least, it may seem easier to negotiate within such a smaller group of countries (see for instance the example of Montreal Protocol negotiations in Box 1-2). As could be concluded from Chapter 3, the Kyoto Protocol *de facto* created a relatively small coalition of industrialised country Parties with quantified commitments, from which developing countries were exempted, although this coalition could not have emerged without the CDM cooperation between industrialised and developing countries. In 2009, the Major Economies Forum on Energy and Climate was launched to facilitate a dialogue on energy and climate change among larger developed and developing country economies, thereby potentially limiting the 'coalition size' to these countries.[114]

Nevertheless, it can be questioned whether building such smaller coalitions would be simpler than a global approach, such as it has been aimed at under the UNFCCC and the Kyoto Protocol. First of all, the group of countries with highest GHG emissions is very diverse; not only are major industrialised countries among them, with varying interests and profiles, but also rapidly industrialising countries, such as China, India, Mexico, and South Africa. As explained in Chapter 1, the recent negotiations on a post-2012 climate policy regime have made clear that the latter countries have been unwilling to follow a 'target and timetable' approach with national, legally-binding targets, which has complicated their joining of a climate policy coalition with such targets.[115] Second, a system with emission reduction commitments for only a particular group of countries can lead to 'trade leakage', also called 'carbon leakage' (Schreuder, 2009).[116] Carbon leakage reduces the effectiveness of a geographically

[114] The Major Economies Forum on Energy and Climate contained the following countries: Australia, Brazil, Canada, China, the EU, France, Germany, India, Indonesia, Italy, Japan, Korea, Mexico, Russian Federation, South Africa, the UK, and the USA (Major Economies Forum, 2009).

[115] Although the Chinese President Xi agreed, during a meeting with US President Obama on 12 November 2014, to let Chinese GHG emissions peak by 2030, followed by a GHG emission reduction pattern, a clear emission reduction target was not announced (Vlaskamp & Elshout, 2014).

[116] In the context of climate change policy, two aspects of trade leakage could be distinguished. First, countries with emission reduction commitments would switch from carbon-intensive fossil fuels to fuels with lower

limited climate policy regime as companies can move their business to countries or regions without commitments. Therefore, strong action by a limited number of Parties without comparable action by the other major emitters is not very useful (Gros & Egenhofer, 2010), so that the framework described in Chapter 1 (Figure 1-3) with the aim for a climate policy package with globally supported GHG emission reduction measures can also be applied for an analysis of post-Kyoto climate policy negotiations.

As a consequence, also ongoing negotiations on a future climate policy regime will have to address the division between developed and developing countries. This has not become easier over time since the initial distinction between developed and developing countries (Annex I vs non-Annex I Parties) has become increasingly difficult to maintain. Negotiations have made particularly clear that treating all developing countries as one group does not do justice to the wide diversity among them. For example, in addition to the group of small-island state developing countries, which already operated as a negotiation group during the early 1990s (see Chapter 2, Box 2-1), negotiations have increasingly focussed on the position of rapidly growing developing countries and whether or not these countries would still have to be considered 'real' developing countries or should join the Annex I group. Moreover, countries differ in terms of their longer term economic, social and environmental priorities.

Recent developments in climate negotiations, since 'Copenhagen' and 'Cancun' (see Chapter 1), have shown an increasing interest in embedding climate change mitigation and adaptation actions in national economic, social and environmental planning, especially in developing countries, as climate change mitigation and adaptation have become increasingly interlinked with domestic planning. For instance, it has been estimated that, for making the Millennium Development Goals in Africa resilient to climate change, 40% more funding will be required over the following ten years (Anderson, 2011). Such increased knowledge of potential impacts and risks of climate change has resulted in an increased focus on the need to reduce countries' vulnerability to climate change impacts, so that the sustainable livelihoods and ecosystem services on which people depend can be protected.[117] This is especially important for least developed countries, which are likely to be the most vulnerable to climate changes. The latter aspect has been acknowledged in the 'Cancun Agreements' which call for the establishment of a process to enable least developed countries to formulate and implement national adaptation plans (UNFCCC, 2011a, pp. 5, para. 15-16).

However, it is not only the area of adaptation where 'climate' and 'development' meet. In fact, the growing climate and sustainable development urgencies (*e.g.*, energy poverty, degradation of land and forestry; see Gaast & Begg, 2012, for a detailed discussion) create stronger reasons for countries to realise their economic, social and environmental sustainable development goals with the lowest GHG emissions, and to have this supported under an international climate policy regime. The provisions in the 'Cancun Agreements', such as formulating nationally appropriate mitigation actions (NAMAs) "in

carbon content or to renewable energy sources. Due to the lower demand for fossil fuels in these countries fossil fuel prices will go down, which could create an incentive for countries without commitments to increase their demand for fossil fuels. The GHG emission reduction achieved because of the commitments would thus be offset by increased emissions elsewhere. Second, trade leakage can occur if companies decide to shift their production from countries with commitments to countries without commitments (Barrett, 1997) (Barrett, 2000) and (Schreuder, 2009).

[117] Adaptation measures can focus on reduced impacts of climate change on health and social systems and on sectors such as agriculture, biodiversity and ecosystems, production systems, and physical infrastructure, including the energy grid.

the context of sustainable development" (UNFCCC, 2011a, pp. 9, para. 48), could be important steps in that direction. Moreover, the process of technology needs assessment for climate change (TNA) (UNDP, 2010) takes developing countries' development priorities as a starting point for identifying strategic sectors for achieving climate and sustainable development goals and selecting technologies for mitigation and adaptation with development benefits.

After the failure at COP-15 in Copenhagen to achieve a global climate agreement with quantified emission reduction commitments for a wider group of developed and developing countries for the period beyond 2012, the 2010 'Cancun Agreements' (COP-16) moved the negotiations away from a focus on national, legally-binding emission reduction commitments towards an approach whereby developed and developing countries could pledge (voluntary) emission reductions. Moreover, developing countries' mitigation actions should be 'nationally appropriate' (UNFCCC, 2011a, pp. 7-12) based on 'low-emission development strategies' (UNFCCC, 2011a, pp. 9 and 11, para. 45 and 65). With the decisions at 'Cancun', which were further specified at COP-17 (Durban, 2011), COP-18 (Doha, 2012) and COP-19 (Warsaw, 2013), climate negotiations have taken a turn, at least temporarily, from legally-binding quantitative commitments to nationally appropriate climate change mitigation actions. It is furthermore noted that the concept of Intended Nationally Determined Contributions (INDCs), which Parties can, as agreed at COP-19, propose as GHG emission reduction measures could have various forms, ranging from quantified national targets to policy measures or technology transfer activities (Earth Negotiations Bulletin, 2013). While not guaranteeing that these actions taken together would lead to the objective of limiting global temperature increase to 2^{o}C (as recommended by the IPCC, 2007, and UNFCCC, 2011a, p. 3; para. 4), integrating climate policy actions in countries national development planning could create additional incentives for countries to take climate measures as these support reaching their national development targets.

In light of these recent negotiation developments, this chapter assesses how meeting the three basic negotiation conditions identified in this study can result in a future climate policy coalition whereby climate change mitigation and adaptation actions are formulated in accordance with countries' sustainable development priorities, with a specific focus on how this supports developing countries' participation in a future climate policy coalition. In terms of basic condition 1, it will be assessed how such a negotiation process could result in an outcome which would bridge the climate emissions gap as identified by the UNEP Emissions Gap report (UNEP, 2014) (*i.e.* a situation where outcome D is close or even equal to outcome A in Figure 1-3). With respect to basic condition 2, it will be explored how the existing UNFCCC/Kyoto Protocol negotiation process and it bodies, including the new bodies established at Cancun, Durban and Doha for technology transfer, adaptation and finance, could enable a flexible approach towards a global coalition. Concerning basic condition 3, scope for tactical manoeuvres and facilitating support to negotiations will be explored.

For that, the chapter takes as a starting point the process of stimulating low-emission development by technology transfer and innovation through the TNA process under the UNFCCC. TNAs form an illustrative file as these have been conducted since 2001 by over 120 developing countries, in order to support them in identifying technologies for climate change mitigation and adaptation in light of countries' national development priorities. The chapter subsequently focuses on the question how insights gained from TNAs could be used for identifying NAMAs and identifying finance and capacity building needs so that low-emission development strategies could be formulated with action plans for

their implementation. Finally, the chapter assesses how international climate policy making could organise financial, technical and capacity building transfers across (developing) countries for more rationalised climate policy support, which could enhance countries' interest in and benefits from a global climate policy coalition.

7.2. Climate Negotiations and Sustainable Development

7.2.1. Inter-dependencies between climate change and sustainable development[118]

The increasing insights on the socio-economic, technical and environmental risks of climate change have resulted in a range of international climate policy agreements. The first of these agreements was reached at the UN Earth Summit of 1992 with the adoption of the UNFCCC (see Chapter 1). However, climate change was not the only issue on the agenda of the Summit. The overall focus was on the relationship between economic development and environmental degradation, such as climate change, threats to biodiversity and forest degradation. In order to address these concerns, other adopted documents, in addition to the UNFCCC, were:

- Agenda 21 as a programme for global action on sustainable development;
- The Rio Declaration on Environment and Development;
- The Statement of Forest Principles; and
- The Convention on Biological Diversity.

Together, these documents formed the message "that nothing less than a transformation of our attitudes and behaviour would bring about the necessary changes" (UN, 1992).

In order to mark the 20th anniversary of the 1992 Earth Summit, the UN Conference on Sustainable Development (UNCSD) or 'Rio+20' (Rio de Janeiro, Brazil, 4-6 June 2012) discussed progress made since 1992 and explored gaps between goals and achievements. Among the aims of Rio+20 were a new policy agenda for a "green economy in the context of sustainable development and poverty eradication" and "creating an institutional framework for sustainable development" (United Nations Conference on Sustainable Development (UNCSD), 2011).

The developments and initiatives between 1992 (UNCED) and 2012 (Rio+20) have increasingly made clear that climate policy making has increasingly become interrelated with economic, financial, environmental and sustainable development policies, both in industrialised and developing countries (Jackson, 2009). For example, efforts to reduce GHG emissions have to take place against the backdrop of an increasing global energy demand (IEA, 2014a). Another example of the increasing interlinkage of climate change with other policy areas is that in developing countries the urgency of climate change exists alongside the development urgencies as formulated by the Millennium Development Goals. According to (Practical Action, 2010), one and a half billion people in the world have no access to electricity and three billion people rely on traditional biomass and coal for cooking. The impact of the latter on people's health is illustrated by the fact that indoor smoke from traditional cook stoves causes 1.4 million deaths per year. In general, "energy poverty is critically undermining the achievement of the [Millennium Development Goals, MDG]. As long as hundreds of millions of

[118] This section has been published as sections 1.2.2 and 1.2.3 in Gaast & Begg (2012).

people remain deprived of the basic energy services needed to stay fed and healthy, earn a living, and allow the time needed for learning and fulfilment, the MDGs will remain out of reach" (Practical Action, 2010, p. vii).

In 2010, the UN Secretary General's Advisory Group on Energy and Climate Change (AGECC) recommended universal access to modern energy services by 2030 (basic minimum threshold of modern energy services for both consumption and productive uses) and to reduce global energy intensity by 40% by 2030, by building and strengthening countries' capacity to implement effective policies, market-based mechanisms, business models, investment tools and regulations with regard to energy use (AGECC, 2010). The Least Developed Countries Expert Group under the UNFCCC pointed out that development and adaptation policies and practice need to be blended (LDC Expert Group, 2009).

These inter-dependencies show a need for strategies in countries whereby actions for low GHG emission pathways are identified in the light of countries' increasing energy demand and sustainable development priorities, including countries' need for reducing energy poverty.[119]

7.2.2. Increased focus on low-emission development strategies[120]

The above described need for linking countries' climate policy actions with their sustainable development priorities is reflected in the 2010 Cancun Agreements which contain a joint vision for long-term cooperative action between all countries which "addresses mitigation, adaptation, finance, technology development and transfer, and capacity-building in a balanced, integrated and comprehensive manner to enhance and achieve the full, effective and sustained implementation of the Convention, now, up to and beyond 2012" (UNFCCC, 2011a, pp. 2, para. 1). For developing countries in particular, the Cancun Agreements contain a decision that they "will take nationally appropriate mitigation actions [NAMAs] in the context of sustainable development, supported and enabled by technology, finance and capacity-building, aimed at achieving a deviation in emissions relative to 'business as usual' emissions in 2020" (UNFCCC, 2011a, pp. 9-10, para. 48).

In addition, all Parties are invited to enhance action on adaptation under the Cancun Adaptation Framework, through "planning, prioritising and implementing adaptation actions, including projects and programmes, and actions identified in national and sub-national adaptation plans and strategies [with] impact, vulnerability and adaptation assessments, [to] establish a process to enable least developed country Parties to formulate and implement national adaptation plans [NAPs]" (UNFCCC, 2011a, pp. 4-6, para. 14a-b, 15, 20e).

As mentioned above, developing countries are also encouraged to develop low-emission development strategies (LEDS) or plans in the context of sustainable development (UNFCCC, 2011a, pp. 3, para.6). This concept was introduced by a number of Parties during and after the 2009 Climate Conference in Copenhagen (COP-15). For example, the EU suggested that developing countries prepare low carbon growth plans from which NAMAs could be formulated (UNFCCC, 2009a). Another example is the proposal submitted by Republic of Korea, suggesting that: "… developed country Parties need to

[119] Note that in Practical Action (2010), energy access is considered for a range of services: lighting, cooking and water heating, space heating, cooling, information and communications, and earning a living.
[120] This section has been published as section 1.3.6 in Gaast & Begg (2012).

provide developing country Parties with a roadmap for low carbon development which includes appropriate policy tools and necessary support to enable them to pursue greenhouse gas emission reduction and economic development at the same time" (UNFCCC, 2009a). LEDS[121] can be domestic strategy documents that integrate national climate change policy into a broader framework of development (Clapp, et al., 2010). While there is as of yet no clearly established process for LEDS, several studies identify key steps of the process (Clapp, et al., 2010) (World Bank, 2009) (Project Catalyst, 2009).

In addition to the decisions on LEDS, NAMA and NAP formulation, the Cancun Agreements:

- Elaborated on how capacity building and financial support to developing countries could be arranged;
- Offered guidelines for reducing GHG emissions through avoided deforestation and reduced land degradation; and
- Established the Technology Mechanism for support of development and transfer of technologies for mitigation and adaptation to developing countries.

As such, the text contained several conceptual agreements between countries which were formalised at the COP-17 and COP-18 (Durban, South Africa, 2011, and Doha, Qatar, 2012).

7.3. Stimulating Low-Emission and Climate-Resilient Development through Technology Transfer and Innovation

7.3.1. Acceleration of innovation for climate and development[122]

Low-emission and climate-resilient development will involve technology transfer and innovation on a large scale and these concepts are briefly explored below as they relate to how the climate and development goals of a country may be attained. In the next section, further elaboration on technology transfer and innovation is provided. Development literature, such as Practical Action (2010), clearly demonstrates that energy access through low-emission technologies is a major means of addressing poverty alleviation, thus addressing both sustainable development and climate goals. In addition, coping strategies are urgently needed to help countries adapt to climate change impacts and ensure a changing climate does not hamper poor people's access to energy (Practical Action, 2010).

Technology transfer is a complex process involving not just equipment or measures, but also people. It can be defined as a set of processes "covering the flows of know-how, experience and equipment, for mitigating and adapting to climate change amongst different stakeholders such as governments, private sector entities, financial institutions, NGOs and research/education institutions" (IPCC, 2000b, p. 3). In line with this, technology transfer is a process of "learning to understand, utilise and replicate the technology including the ability to decide which technology to transfer and adapt it to local conditions and integrate it with indigenous technologies" (IPCC, 2000b, p. 3).

[121] The terms low carbon and low emission development strategies are used interchangeably in literature sources. In this chapter, we use the term low emission development strategies as this implies a focus on mitigation of a range of GHGs instead of just carbon or carbon dioxide.
[122] This section has been published as section 1.4.3 in Gaast & Begg (2012).

The process of transfer and innovation of the technology or measure into a country system therefore involves a dynamic mix of actors, institutions and organisations as well as the hardware and the tacit knowledge needed for success. Moreover, technologies can be in different stage of development (*e.g.*, still in the process of research and development, ready for deployment in the market, or near commercial application) which will have implications for what the necessary changes are in the country for successful transfer and innovation processes. Finally, the country context is important as it determines the current enabling environment for the technologies, including the specific cultural and business habits, language, trust, networks and capacity available for successful transfers. A strategy may involve a range of activities to overcome barriers to technology diffusion into the market or system. These activities can include enabling policies and measures, networks, market or system support (*e.g.*, quality control), education and training, *etc*., derived from the accelerating activities required for the specific country and technology characteristics.

The above observations are in line with the recent analysis by Jackson (2009) who illustrates how economies in developed and developing countries need to transform to low-emission societies in order to achieve long term sustainable development. In Jackson's view, system changes are crucial in this respect, with a central role for innovation.

7.3.2. Why is technology important? [123]

Technology transfer can be a powerful solution for simultaneously addressing the climate change and development challenges described above. This was recognised in Art. 4.5 of the UNFCCC (UNFCCC, 1992a). Also, as explained in Gaast & Begg (2012, pp. 7-8, 18), there are increasing insights that meeting a growing global energy demand with improved energy access for the poor can only go hand in hand with low GHG emission pathways. The recognition that these pathways involve rapid innovation of low-emission technologies has moved technology development and transfer to the heart of the climate negotiations and development debate.

Though technology transfer was discussed at succeeding sessions of the COP within the context of the Convention's Art. 4.5, it was not until 2001 that significant change occurred. COP-7 (Marrakech, Morocco) took a decision on 'Development and Transfer of Technologies' and established the Expert Group on Technology Transfer (EGTT) (UNFCCC, 2002c, pp. 22-31). The key elements of this decision were (UNFCCC, 2002c, pp. 22-31):

- Assessment of technology needs;
- Technology information: technical and other information;
- Enabling environments to solve policy and legal barriers;
- Capacity building for identifying countries' technology needs; and
- Mechanisms for the coordination of technology transfer and formulation of technology projects.

New areas introduced were:

- Innovative options for financing technology transfers; and
- Technologies for adaptation.

[123] This section has been published as section 2.3.1 in Gaast & Begg (2012).

In 2009, the additional financing needs for low-emission technologies in developing countries were estimated at USD 105 to 402 billion per year (which is 40 to 60% of global climate technology finance needs) (SBI, 2009a, p. 32). It was also concluded that "not all countries have the technologies needed or the ability to innovate new technologies to mitigate and adapt to climate change. Those countries that are lacking in the technologies or capacity, mainly the developing countries, need to be helped not merely to adopt the existing environmentally friendly technologies but also to develop the capacity to innovate new technologies and practices in cooperation with others" (SBI, 2009b, p. 11).

As is discussed below in this chapter, identification of technologies and possibly implementing them in projects may not be enough to initiate a system change for widespread low-emission and climate-resilient technology innovation in a country. The latter will also need overarching strategies with activities such as organisational/institutional behavioural change, system supporting services (*e.g.*, finance and legal support), network creation and support, skills training, international cooperation and intellectual property rights, and corresponding policies and measures.

This has been made clear by Subsidiary Body for Implementation (2009, p. 11) as follows: "Technology transfer includes not merely transfer of hardware but also of best practices, information and improvement of human skills, especially those possessed by specialized professionals and engineers. The acquisition and absorption of foreign technologies, and their further development, are complex processes that demand considerable knowledge and efforts on the part of those that acquire them. It is the capacity of the countries and the enabling environment in those countries that will enable them to change to a low carbon economy."

7.3.3. Assessing technology needs for climate and development [124]

The provisions that have been developed under the UNFCCC and included in the Cancun Agreements, such as LEDS and TNA, as well as NAMA and NAP, all enable for a developing country-specific identification of low-emission and climate-resilient development measures. Of these provisions, LEDS and TNA aim at formulating sector and/or national strategies, whereas NAMAs and NAPs are actions that could result from such strategies and the policies and measures derived from these (Gaast & Begg, 2012). In this section, the process of identifying mitigation and adaptation technologies and measures in the light of a country's national development priorities is illustrated with help of the TNA process.

COP-7 encouraged "…developing countries…to undertake assessments of country-specific technology needs, subject to the provision of resources, as appropriate to country-specific circumstances" (UNFCCC, 2002c, p. 24). These Technology Needs Assessments (TNAs) were defined as "a set of country-driven activities that identify and determine the mitigation and adaptation technology priorities of Parties other than developed country Parties…particularly developing country Parties" (UNFCCC, 2002c, p. 24). In order to support countries in conducting TNAs, the United Nations Development Programme (UNDP) developed a TNA handbook.[125] After 2002, 92 developing countries received funding from the Global Environment Facility (GEF) for conducting TNAs

[124] This section is a shortened and combined version of sections 2.3.2, 2.4.1, 2.4.2 and 2.5 in Gaast & Begg (2012).

[125] This was done in collaboration with the Climate Technology Initiative (CTI), EGTT and the UNFCCC secretariat (UNDP, 2010, p. 4).

(UNFCCC, 2009b), of which 78 were supported by UNDP, and 14 by the United Nations Environment Programme (UNEP).

At COP-13 (Bali, Indonesia, December 2007), the importance of technology transfer under the Convention was further emphasised as a building block for a future climate policy regime (UNFCCC, 2008b). The GEF was requested to elaborate a strategic programme to scale up the level of investments for technology transfer to help developing countries assess their needs for environmentally sound technologies. The programme was adopted at COP-14 (Poznań, Poland, December 2008) as the 'Poznań Strategic Programme on Technology Transfer' (UNFCCC, 2008c) and it envisaged supporting 35 to 45 developing countries to prepare or update TNAs and formulate technology action plans as TNA output. This new of round of TNAs was has been implemented by UNEP with financial support from the GEF (USD 9 million) (UNFCCC, 2011b) (UNEP DTU, 2014a). In November 2010, an updated TNA Handbook was endorsed by the EGTT (UNDP, 2010).[126] Between 2009 and 2013, 32 developing country Parties conducted TNAs for mitigation and adaptation (UNFCCC, 2013a), for which they received support from regional centres, a help-desk facility and regional training workshops.

Figure 7-1 shows which countries have conducted TNAs since 2002 and have reported on their TNAs to the UNFCCC secretariat as input for TNA synthesis reports (UNFCCC, 2009b) (UNFCCC, 2013a).

Figure 7-1. TNA countries included in the second and third TNA synthesis report (UNFCCC, 2009b) and (UNFCCC, 2013a).

The overall TNA process involves the formulation of strategies and action plans for enabling a change to low-emission sustainable development. It contains two main stages:

[126] The author of this study was consulted by UNDP to co-author the updated TNA Handbook (UNDP, 2010), together with Dr Katherine G. Begg (University of Edinburg, UK).

1. Identification of the technologies or measures for a country which could be used to reduce GHG emissions and climate change vulnerability at the same time as delivering the required sustainable development benefits; and
2. Identification of activities to accelerate the innovation into the country system by identifying actions for overcoming barriers and then formulating them into a strategy and action plan at the technology, (sub)sector, or national level.

The main steps and issues for conducting a TNA are summarised in Figure 7-2 below.

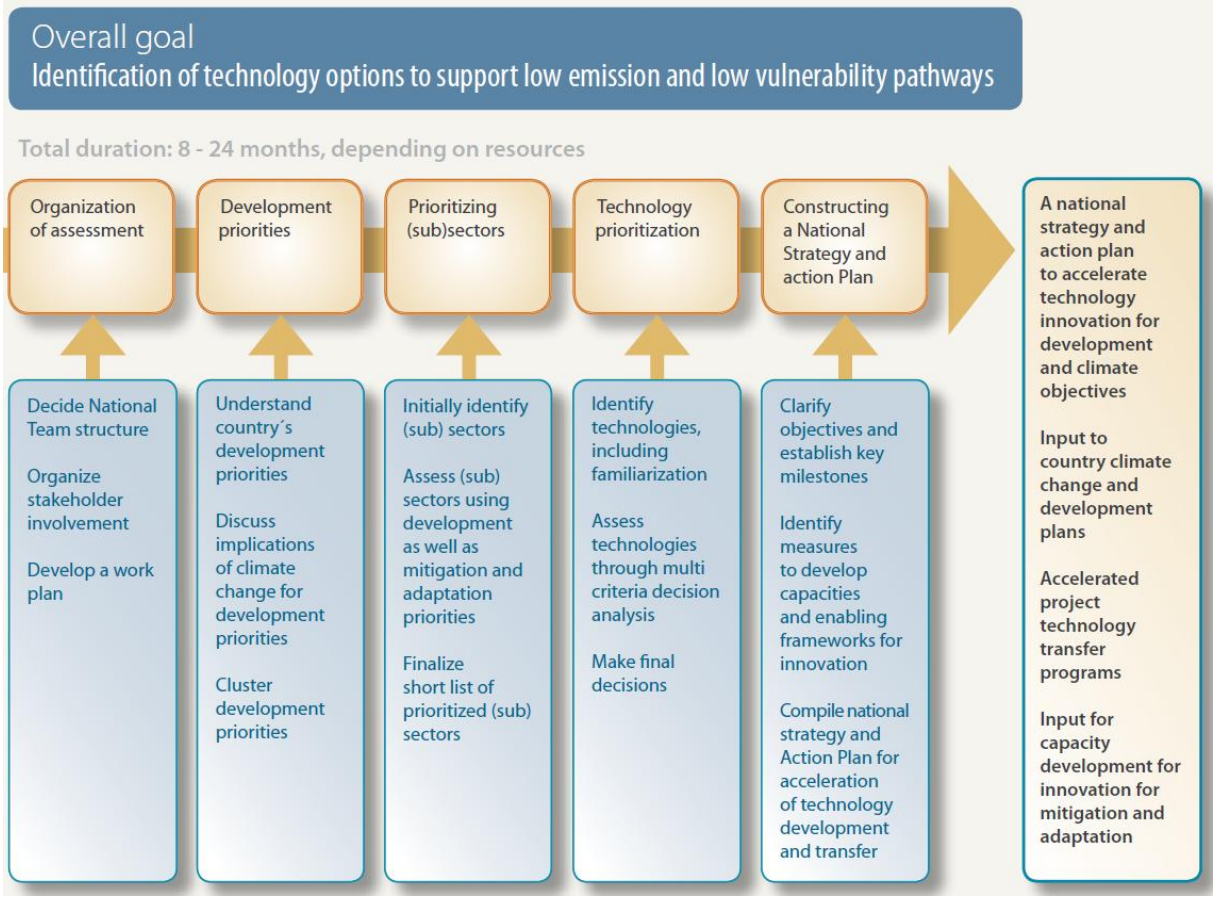

Figure 7-2. Key steps of the TNA process (UNDP, 2010, p. 8)

The TNA approach is built on the vision that integrating development and climate into climate strategies requires taking a developing country's sustainable development priorities as a starting point and using these priorities as criteria for identifying strategic sectors for climate change mitigation and adaptation and achieving development goals (after the initial organisation of the assessment, these are the second and third step in Figure 7-2). As argued by CCAP (2010), embedding the action based processes into such a long-term national framework would increase the coherence of the action portfolio. In the fourth step in Figure 7-2, country stakeholders are familiarised with technologies within each of these priority sectors or measures for mitigation and adaptation using a range of approaches, including on-line technology platforms, such as ClimateTechWiki (UNDP, et al., 2014a). An initial list of technologies is generated and possibly structured according to whether the technology or measure is available in the short term or the medium to long term and whether it is a small scale or

large scale technology. A multi criteria decision approach is then used to prioritise a portfolio of technologies and measures in the priority sectors in support of the country's sustainable development.

The prioritisation of technologies or measures within each priority sector can be based on a benefit-to-cost ratio or cost-benefit analysis over all the sustainable development and climate and/or adaptation benefits. This produces a summary table of portfolios of projects per priority sector with their sustainable development benefits, costs of roll out and climate /adaptation benefits, which can be used for input to a national strategy and for meta-analysis across countries. Table 7-1 shows a hypothetical example of such an output table for prioritised technologies for cooking in a developing country. The table shows the potential benefits and costs of technology options should they be implemented in the (sub)sector at their technical potential.

Table 7-1. Hypothetical example of TNA summary table for prioritised cooking technologies in sub-sector of 'Residential and Offices' in a developing country

Priority technologies identified	Potential GHG abatement until 2025 at sub-sector level	Benefits identified from multi criteria decision analysis for technology in TNA	Estimated lifetime costs for large-scale implementation (USD)
Short term/small scale technologies			
Biogas for cooking and electricity	3.4 Mt CO_2-eq	• Improved health because of reduced in-house smoke • Reduced drudgery for women and children because of reduced need of firewood • Reduced poverty at farms	17,000,000
Charcoal production for cooking and heating	2.7 Mt CO_2-eq	• Enhanced carbon sink and moisture reservoir • Enhanced household energy security • Greater entrepreneurial opportunities created through sales of poles and firewood • Time spent daily on gathering fuel wood is saved for use in more productive activities	25,000,000
Long term/small scale technologies			
Solar cookers	3.8 Mt CO_2-eq	• Time savings which results from the reduction in wood gathering • Build and emphasise links with women's empowerment by creating new organizations led by women • The impact of solar stoves on the household economy depends on the organisation of the household economy and the extent to which the household is linked to the wider economic network • Improvement of health conditions, promotion on equitable access to energy and poverty alleviation	34,000,000

Source: author's example based on UNDP (2010, pp. 60-61, tables 5-3 to 5-6); also published in Gaast & Begg (2012).

Within the process, it is important that the voices of different stakeholder groups are heard so that stakeholders' knowledge and concerns are incorporated. Care is taken to have a participatory approach with stakeholders right from the start which supports their 'buy in' in the process, including their role in the eventual implementation of prioritised low-emission and climate-resilient technologies and actions. As an example, Figure 7-3 shows an example of how the TNA process was organised during 2010-2013 and how stakeholders from different sectors were represented in sectoral and technology work groups and collaborated with national experts (on, *e.g.*, sectors, technologies, and overall country strategies), a national TNA committee, a process coordinator, and the steering committee. The figure also shows the international and regional support organised under the GEF/UNEP TNA project.

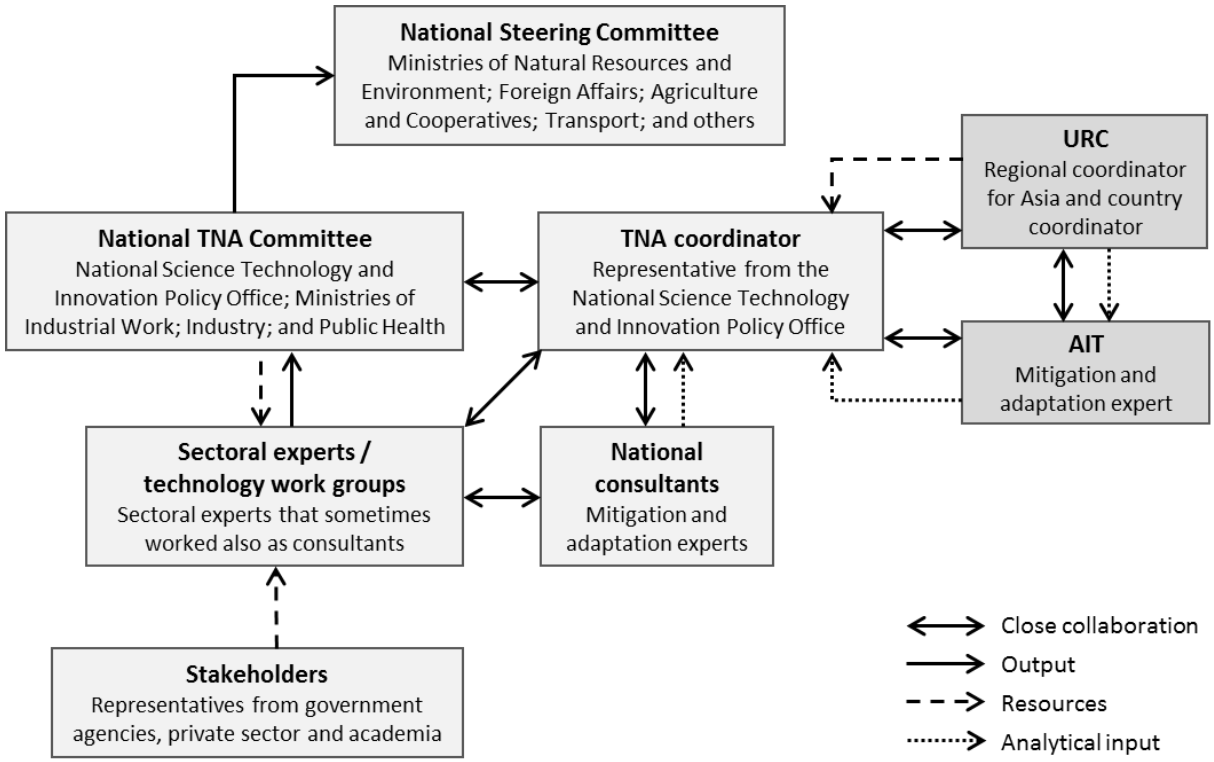

Figure 7-3. TNA organisation in GEF/UNEP TNA Project (National Science Technology and Innovation Policy Office, 2012)

Finally, it is important that the approach takes account of the uncertainties that surround the choices. Assessing development and climate change mitigation and adaptation needs implies that decisions are taken for a relatively long period of time, *e.g.*, 20 years, so that stakeholders need to develop a feeling not only for what is happening now, but also for what might happen in the future. For instance, a country with a relatively small tourist industry could expect this sector to become bigger in the next two decades and among the larger GHG emitters. Such expectations can be included in the analysis and stakeholders could identify options for making areas suitable for tourism more climate-resilient.

The second stage, represented by the fifth step in Figure 7-2 is to move from the prioritised technologies and measures to strategies and technology action plans (TAP). This stage is explained in further detail in the next section.

The new TNA process, as applied by 32 developing countries during 2009-2013, has been stricter than the process applied for earlier TNAs (before 2009). There have been a number of reasons for the more structured approach. First, the TNA reports before 2009 were difficult to compare as, due to relatively less structured guidance, countries had to largely formulate their own interpretations of what TNA steps would look like. This limited the scope for analysis and policy conclusions across TNA reports. Second, the second round of TNAs was set up to be more strongly connected to national development priorities so that technology choices could be better embedded in countries' national planning processes (UNDP, 2010, pp. 5, 6). Third, and related to the second reason, the updated TNA Handbook (UNDP, 2010, p. 5) considered TNAs an important source of information for the formulation of, among others, NAMAs and other national low-emission and climate-resilient innovation processes.

However, this does not imply that the relatively strictly structured TNA as described in this section is the only way for developing countries to assess their technology needs for mitigation and adaptation. For instance, there can be multiple ways for organising TNAs without losing the benefits of well-structured and mutually comparable TNA country reports (UNFCCC, 2014f). For example, instead of starting from development priorities and working bottom up, through the TNA steps, towards a technology portfolio, a country could first identify national priority areas (or problems) such as electricity (limited security of supply), transport (increasing congestion problems) and water management issues, and only then start a TNA process to identify solutions within these areas which are also beneficial with a view to climate change. Alternatively, a country could identify within its priority or problem areas, a portfolio of policies and instruments to spur climate change mitigation and adaptation (*e.g.*, feed-in tariffs in the electricity sector) and then let technology choices be determined by the market.

7.4. From Prioritised Technology Options to a Climate and Development Strategy

7.4.1. Formulating technology action plans for implementation of technologies[127]

As explained above in this chapter, the Cancun Agreements (UNFCCC, 2011a) call upon developing countries to undertake mitigation actions that are nationally appropriate (NAMAs) and to formulate national adaptation plans (NAPs), along with low-emission development strategies (LEDS). However, details on how these can be formulated have not been worked out yet under the UNFCCC. The discussion below outlines the bottom up approach taken in the TNA process (UNDP, 2010) for generating these outputs and then looks at the other approaches for developing strategies to address technology innovation for sustainable development goals.

[127] This section is a shortened version of section 3.4.1 in Gaast & Begg (2012).

Once the portfolios with prioritised technologies have been put together in a TNA, a next step is to identify actions to support the implementation of these technologies. For that, stakeholders can first identify technology transfer barriers that may exist in the country, such as insufficient capacity, market inefficiencies, lack of regulatory framework, need to purchase technology licenses, *etc*. (Boldt, et al., 2012) For addressing these barriers, measures can be identified at the level of a technology, the sector or the country as a whole, which would then form input for a technology action plan (TAP) (UNEP Risoe Centre, 2012). Activities in a TAP can first of all be structured in categories, such as:

- Measures for creation of stakeholder networks to enable the exchange of ideas and information to ensure dissemination of innovation;
- Policies and measures to promote technology transfers;
- Organisational/behavioural change;
- Market, system support, and financial services;
- Skills training and education; and
- International cooperation.

In addition, as described above, whether the technology is applied on a small or large scale needs to be taken into account, as well as the stage of innovation of the technology: RD&D, deployment in the market and diffusion to commercial application (UNDP, 2010, p. 71). Technologies which are still in the process of RD&D need a different enabling environment than technologies which are close to commercial application. For example, for technologies in the RD&D stage it is important that research capacity is available within the country with a strong supporting role by public sector developers, and that intellectual property right issues are taken into account. On the other hand, for technologies in the process of deployment into a market, the main focus may be on the required the skills base for technology operation and maintenance or on how quality control and enforcement for the technologies can be created.

Most attention on innovation or technology transfer in early TNA reports has been on implementing single projects and overcoming the barriers to their success (UNFCCC, 2011b). The updated TNA process allows both a project technology strategy (in the form of project ideas) and a larger scale technology innovation, such as for a sector or the country as a whole. A technology strategy is generated by identifying activities for accelerating the development and transfer of the technology within the (sub)sector at a desired scale. For example, for improving the enabling environment for technologies for adaptation within the agriculture sector, it could be suggested that the government organises a country-wide training programme for, *e.g.*, crop rotating techniques. This could increase the knowledge level within the sector of operating the prioritised technology or measure. This activity could then be categorised under the core element 'skills training and education' as an input for a strategy.

This can be repeated for other priority technologies identified for the (sub)sector. Larger scale strategies can be generated by aggregating across technology-level strategies for a (sub)sector level strategy and by aggregating across (sub)sectors for a national strategy.

7.4.2. Enhancing implementation of TNA results

The main objective of technology action plans (TAPs) resulting from a TNA is to support implementation of technologies prioritised in a TNA. On the basis of the experience with TNAs conducted between 2009 and 2013, interviews were held with 30 TNA practitioners and technology transfer experts on how technology implementation can be enhanced by focussing on (UNFCCC, 2014f):[128]

- What information should be included in TAPs and project ideas?
- Who should take part in the formulation of TAPs and project ideas?
- What potential sources for funding could be considered for inclusion in TAPs and project ideas?
- How interlinkages between TNAs and NAMAs/NAPs may spur implementation of TNA results?
- What could be the role of Multilateral Development Banks to support implementation of TNA results?

Interviewed experts from financial institutes, multilateral development banks (MDBs) and other development banks generally argued that TAPs and project ideas, prepared as part of TNAs during 2009-2013, lack information about the business case of technologies. For a government to decide on how to allocate resources for technology implementation, information is needed about the ratios of benefit to costs of a technology-related programme and/or project. Examples of such ratios are internal rates of return or economic rates of return.

As an example, interviewees explained how, for instance, MDBs use economic internal rates of return to explore the broader economic benefits an investment could bring to the economy of a country by estimating the economic values of benefits that may not have direct financial return (*e.g.*, better air quality, reduced congestion, *etc.*). According to the interviewees, in some sectors, particularly those related to adaptation, this economic internal rate of return would need to be substantial to justify the use of public funds. Such an economic benefit to cost ratio does not have to be detailed, but policy makers and investors (both public and private) need to have a good overview of the economic benefits of a technology (*e.g.*, at the project/programme level or for the national economy) within a country during a certain timeframe, including the impact of policy decisions on the implementability of the technology. With such information, technology investments can be screened for prioritisation and allocation of resources: *e.g.*, will the economic benefits significantly outweigh the costs; and are there realistic policy instruments that can enhance the viability of such technologies?

In order to facilitate this process, several interviewees suggested that financial experts and potential investors actively take part in the TNA process. These experts could explain requirements for well-structured investment plans. As a result, technology project ideas could already be 'pitched' to potential investors during the TNA. However, some interviewed technology transfer experts have cautioned against involvement of potential investors in the TNA as this may lead to conflicts of interests during the TNA steps.

Alternatively, some TNA practitioners have suggested that TAPs and project ideas may acquire a higher quality and gain financial sector credibility if prepared by sector and technology experts. Two options suggested for that are:

[128] The research, including the interviews, for UNFCCC (2014) was carried out by the author of this study. The text in this sub-section is a reflection of that research as included in Chapter IV of UNFCCC (2014).

- To let the technology prioritisation and TAP and project idea formulation be done by smaller groups with sector experts and/or engineers using their professional knowledge of a sector (supported by iterative consultation with wider stakeholder groups for discussion, questions, modifications, and eventually acceptance). According to this suggestion, adding such expert knowledge to the TNA process would eventually result in TAPs and project ideas that are more credible for potential financiers.
- To include in a TNA a call for proposals to invite technology owners to prepare investment plans for prioritised technologies. These plans could then be screened by the national TNA teams and subsequently shared with potential investors.

Most interviewees, both TNA practitioners and technology transfer experts, emphasised that involvement in TNAs of key ministries for national development planning (*e.g.*, Finance, Economic Affairs or Planning) can support the eventual implementation of TNA results. Without their involvement, there is a risk that TAPs are not endorsed as inputs for national planning as they are considered a result from 'outside' the ministries. This view was also expressed by some experts with a MDB background. They explained that these banks' primary counterparts in partner countries are the ministries of Finance, and for project implementation they work closely with specific sector ministries such as those responsible for energy, transport, water, and agriculture.

Therefore, even though MDBs work closely with the environment ministries on climate change issues, experts argued that it would be easier to support technology implementation if TNAs were better integrated into national planning processes so that the primary counterpart ministries are involved and on board. If, instead, TNAs largely remain 'stand-alone' exercises (with a practical deviation from national development planning), then there may be a lack of coordination with the responsible ministries for the sectors and as a result MDB involvement may become more difficult. Other suggestions by interviewees on possible stakeholder roles in supporting the implementation of priority technologies in TNA countries include:

- **Role of intermediary agents or companies**: For example, an intermediary company could buy a technology from a producer and bring it to the market in the TNA country. This enables the technology producer to enter the market, but its contract is only with one intermediary, a partner which it knows and trusts.
- **'Brokers' with good understanding of banking sector**: Interviewed international financial consultants stated that project ideas in a TNA could be difficult for the banking sector to adopt as the return on investment may be unclear. A TNA consultant with a good understanding of the banking sector could help to mitigate the risks for potential investors.
- **Technology project 'champions'**: For successful technology implementation, several interviewees highlighted the role of personalities or champions who are familiar with potential funding sources and can 'knock on doors' of key ministries. For instance, if local industry were to be engaged in a technology transfer project, then the champion could be a local industry association, a local lender or a technology vendor.

Next to identifying funding requirements for technology implementation, interviewees have pointed out that in TAPs and project ideas also more and better information about potential funding sources should be included. One source of information for that are the TNA guidebooks for accessing international financing for climate change actions, as prepared by UNEP DTU (Limaye & Zhu, 2012)

(Christiansen, et al., 2012). These guidebooks aim at supporting TNA countries to better identify and access financial resources for the mitigation and adaptation activities included in their national TAPs, thereby acknowledging "the very different financial needs and strategies associated with mitigation vis-à-vis adaptation". The guidebooks elaborate on:

- **multilateral financing sources**, such as MDBs and special agencies created by them (such as the GEF), including the special funds for climate change mitigation and adaptation (Clean Investment Funds, Clean Technology Fund and Strategic Climate Fund). MDBs could support inter-country cooperation for a better matchmaking between country TNA programmes, especially when countries within a region have similar technology, capacity support and finance needs. MDBs can also enhance technology implementation by, *e.g.*, supporting technology demonstration projects and providing expertise for technology deployment and diffusion.
- **bilateral financing sources**, such as bilateral financing institutes (*e.g.*, JICA, KfW and AfD) which are created by national governments for the purpose of giving aid or investing in targeted development projects and programmes in developing countries and emerging markets.
- **private funding sources**, such as local and international banks and financial institutions, venture capital, private equity funds and some special funds created to address climate change mitigation and adaptation.

The guidebooks also explore public-private partnerships to leverage private funding flows to fill funding gaps, transfer service delivery risks and improve the cost effectiveness of service delivery.

Interviewed TNA practitioners and technology transfer experts furthermore explained how, in their view, implementation of TNA results can be enhanced through links with NAMA and NAP processes. For instance, NAMAs could leverage support for new technologies which have been prioritised in a TNA but which have no track-record in the country. These technologies could be implemented as part of a NAMA or NAP, thereby also utilising available funding for these processes. What such interlinkages could look like is the topic of the next section.

7.5. Interlinkages of TNA with other UNFCCC Processes and Potential for Harmonisation

In the above, it has been shown how through a TNA a (developing) country can formulate a long-term vision with development priorities and prepare pathways towards that vision with the inclusion of low-emission and climate-resilient 'hard' and 'soft' technology options. As such, the TNA process could be considered an illustration of a 'bottom-up' climate arrangement, which (Earth Negotiations Bulletin, 2013, p. 29) identified as the main development in post-2020 climate negotiations. However, TNA is not the only bottom-up process under the UNFCCC, as also NAMAs, NAPs and LEDS aim at identifying measures for climate change mitigation and adaptation that are 'nationally appropriate' and 'need to be in the context of sustainable development.' (UNFCCC, 2011a, p. 9)

Each of these processes have their own role under the UNFCCC: TNA based on Decision 4/CP.7 (UNFCCC, 2002c) and NAMAs, NAPs and LEDS based on Decision 1/CP.16 (UNFCCC, 2011a).[129]

[129] Formally, there could be a reason for countries to keep TNA, NAMA, NAP and LEDS processes separate. A TNA, given its origin in the UNFCCC Technology Transfer Framework, could be seen as 'politically neutral'

However, since their orientation is to embed climate change mitigation and adaptation measures in (developing) countries' sustainable development priorities, there could be overlaps between the processes and a potential for harmonisation of process steps. UNFCCC (2011) discussed possible interlinkages between TNA, NAMA, NAP and LEDS processes and concluded that a technology prioritisation process with help of a TNA, as described above, could result in measures or technologies for climate change mitigation and adaptation which could be considered as NAMAs and for inclusion in NAPs. The potential benefits of such harmonisation were also underscored by COP-18 (Doha, Qatar, 2012) which agreed that the TNA process "should be integrated with other related processes under the Convention, including nationally appropriate mitigation actions, national adaptation plans and low-emission development strategies" (UNFCCC, 2013c, p. 7). In addition, COP-18 recognised that TNAs and their syntheses are a key information source for the work of the Technology Mechanism, in particular the Technology Executive Committee (TEC),[130] as well as "for governments, relevant bodies under the Convention and other stakeholders" (UNFCCC, 2013c, p. 7).

In light of the above, the section examines the interlinkages between TNAs and:

a. Related processes under the UNFCCC, including NAMAs and NAPs, and
b. The work of the TEC in preparing recommendations on guidance on policies and programmes regarding TNAs and possible interlinkages with related processes under the Convention.

7.5.1. Potential interlinkages TNA and NAMA and NAP processes[131]

As explained above in this chapter, the TNA process contains the following key steps:

1. To identify key priorities based **a country's long term vision** on climate and development,
2. To identify **strategic sectors or areas** to support these priorities,
3. To prioritise **technologies and measures** for mitigation and adaptation within these sectors,
4. To identify **barriers** for development and transfer of these technologies/measures within a country, and
5. To formulate TAPs in the form of **projects, programmes or strategies**.

NAMA and NAP processes basically follow a similar structure, although for these processes a detailed methodology, such as for TNAs, has not been formulated under the UNFCCC. Nonetheless, the focus in a TNA on a country's long term climate and development vision is comparable with the COP-16 Decision that NAMAs need to be "in the context of sustainable development" (UNFCCC, 2011a, pp. 9, para.48). As a result, for example, NAMA and NAP processes could use outputs from different TNA stages, while TNAs for adaptation could particularly contribute to the elements of NAPs as identified by COP-17 (UNFCCC, 2012d, pp. 85-86): "In developing NAPs, consideration would be given to identifying specific needs, options and priorities on a country-driven basis,… coordinated

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while a LEDS may be considered to have a stronger connection with NAMAs (as both are included in the same chapter on 'mitigation' in the Cancun Agreements) and therefore be considered more 'political'.

[130] Among the functions of the TEC is to "provide an overview of technological needs and analysis of policy and technical issues related to the development and transfer of technology for mitigation and adaptation." (UNFCCC, 2011a, pp. 19, para.121a)

[131] This section is based on the analysis done for the background paper prepared for and presented by the author of this study at the fifth Meeting of the Technology Executive Committee, 26-27 March 2013 (UNFCCC, 2013d).

with sustainable development objectives, policies, plans and programmes." Table 7-2 presents an overview of commonalities and differences between TNA and NAMA/NAP processes.

Table 7-2. Overview of commonalities and differences between processes

To what extent are TNA, NAMA and NAP processes embedded in a country's long term development vision?	
Commonalities	**Differences**
• Common focus on a country's overall sustainable development context • Strategic (sub)sectors and areas identified in a TNA could be used as inputs for NAMAs and NAPs • Processes are generally participatory	• Unlike for TNAs, under the Convention no specific methodologies exist for NAMAs and NAPs as of yet
How are technologies or measures for mitigation and adaptation in the country identified?	
Commonalities	**Differences**
• TNA procedures are in principle suitable for other policy concepts that identify technologies and actions in light of climate policy and sustainable development. • Therefore, TNA results could be input for NAMA and NAP processes.	• TNAs explicitly focus on technology choices. In NAMAs and NAPs prioritisation of technologies is more an implicit step before formulating policy action.
What actions are envisaged for low-emission and climate-resilient pathways?	
Commonalities	**Differences**
• There is a common focus on *strategic pathways* with action plans either at the technology or sector and national levels. • NAMA and NAP formulation could possibly benefit from the identification in a TNA of actions for acceleration of technologies for mitigation and adaptation.	• Whereas a TNA focuses mainly on technologies and measures for mitigation and adaptation, NAMAs and NAPs could be more overarching and focus on broader mitigation, adaptation and development issues

Source: UNFCCC, 2013d.

Interlinkages between TNAs and NAMA/NAP processes could support TNAs in the following ways (UNFCCC, 2013d):

- Inform a TNA about a developing country's development objectives as formulated under a NAMA and/or NAP, after which the TNA stepwise methodology can be used to identify options for mitigation and/or adaptation and which can be considered further as a NAMA or in a NAP.
- Enhance the higher-level policy attention for TNAs, which are often 'owned' by the ministries of Environment, while national development planning processes are often managed by the ministries of Finance, Economic Affairs, Transport, Agriculture, *etc*. As NAMAs and NAPs often have a higher-level policy recognition within developing countries (*i.e*. recognition by key ministries), higher-level consideration of TNA results within countries may be enhanced through interlinkages with NAMAs and NAPs (UNFCCC, 2012c). This may also enhance the implementation of TNA results.

In terms of TNAs supporting NAMA and NAP processes, the following possible benefits can be identified (UNFCCC, 2013d):

- **Prioritisation of measures**: As has been explained above, the TNA methodology can be used for a detailed prioritisation of measures to be implemented as NAMAs or included in a NAP. This supports the process of embedding NAMAs in national mainstream processes (Fukuda & Tamura, 2012). A key step in this process is technology familiarisation to ensure that all possible options are considered during the prioritisation. For this, the TNA process includes a set of data sources, such as the on-line technology database ClimateTechwiki (UNDP, et al., 2014a)[132] and technology guidebooks (UNEP DTU, 2014b). Technology familiarisation can also be supported by the information from technology roadmaps (IEA, 2014b) (Londo, et al., 2013).
- **Clarity on scale of implementation:** at the 'Experience-Sharing workshop on Technology Needs Assessment' (Bangkok, September 2012) (UNFCCC, 2012c), it was noted that, while several NAMAs have been identified in developing countries, the scale at which these actions could potentially be implemented within a country is often not clear. For instance, implementation could be at full technical potential, at a scale required for meeting country and/or sector goals, or in the form of a project. TNAs could offer this information as these assume a certain scale of technology implementation (*e.g.*, implementation as project, sector programme, or national strategy).
- **Clarity on mitigation and adaptation benefits:** Part of a TNA, during technology prioritisation and formulation of technology action plans, is to estimate how a technology contributes to climate change mitigation and adaptation and sustainable development within the country context. This includes an assessment, with methods to handle uncertainties and data limitations, which could also be applicable for NAMA and NAP processes as these are also seeking options that deliver a range of climate and development benefits for the countries concerned.
- **Identification of actions to accelerate development and transfer of technologies and/or measures for mitigation and adaptation:** In a TNA, stakeholders analyse how the development and transfer of priority technologies can be accelerated in the country by exploring gaps and barriers in the enabling environment (*e.g.*, markets, legal and regulatory context, public engagement and international collaboration) for prioritised technologies and by identifying actions to solve these gaps and barriers. The actions thus identified can be characterised in terms of: why is an action important, how should it be done, who would be responsible for the action, when would the action need to be implemented, how much would it cost, what are monitoring, reporting and verification requirements, *etc*. These actions taken together help create an **enabling environment** in a country for technologies for mitigation and adaptation, which can be used for: technology implementation projects, sector-level technology programmes, and/or a national strategy for technology development and transfer with action plans. Each of these outputs could be considered inputs for a NAMA and NAP.
- **Exchanging data and knowledge:** TNAs could be complicated by lack of data (especially on costs) or limited exchange of data between country institutes. Interlinkages with other processes could support collaboration on data collection, avoid 'data competition' between processes and

[132] The site contains over 200 technology descriptions for mitigation and adaptation with practical information about a technology's: operational requirements, status, market potential, contribution to sustainable development, and costs.

help rationalise existing data and other (human) resources across the processes. This would streamline similar but not identical processes and avoid or reduce 'institutional congestion' (Fukuda & Tamura, 2012).

In conclusion, TNA results can be used as inputs for NAMA and NAP processes through exchange of data, outputs and recommendations, while harmonisation with NAMAs and NAPs could also support the acceleration of implementing TNA results, *e.g.*, by more efficient allocation and use of data and developing country resources and enhancing high-level recognition of TNA results when interlinked with particularly NAMAs and NAPs which have received more high-level political attention in developing countries. Finally, establishing interlinkages between TNAs, NAMAs and NAPs would help a country rationalise the outputs from these processes. Non-harmonised processes could result in duplications and 'blind spots' or it could result in a patchwork of, potentially conflicting, messages to policy makers, financial entities, capacity building supporters and other stakeholders. The findings in this chapter on interlinkages between TNA and NAMA and NAP processes have been summarised in Figure 7-4.

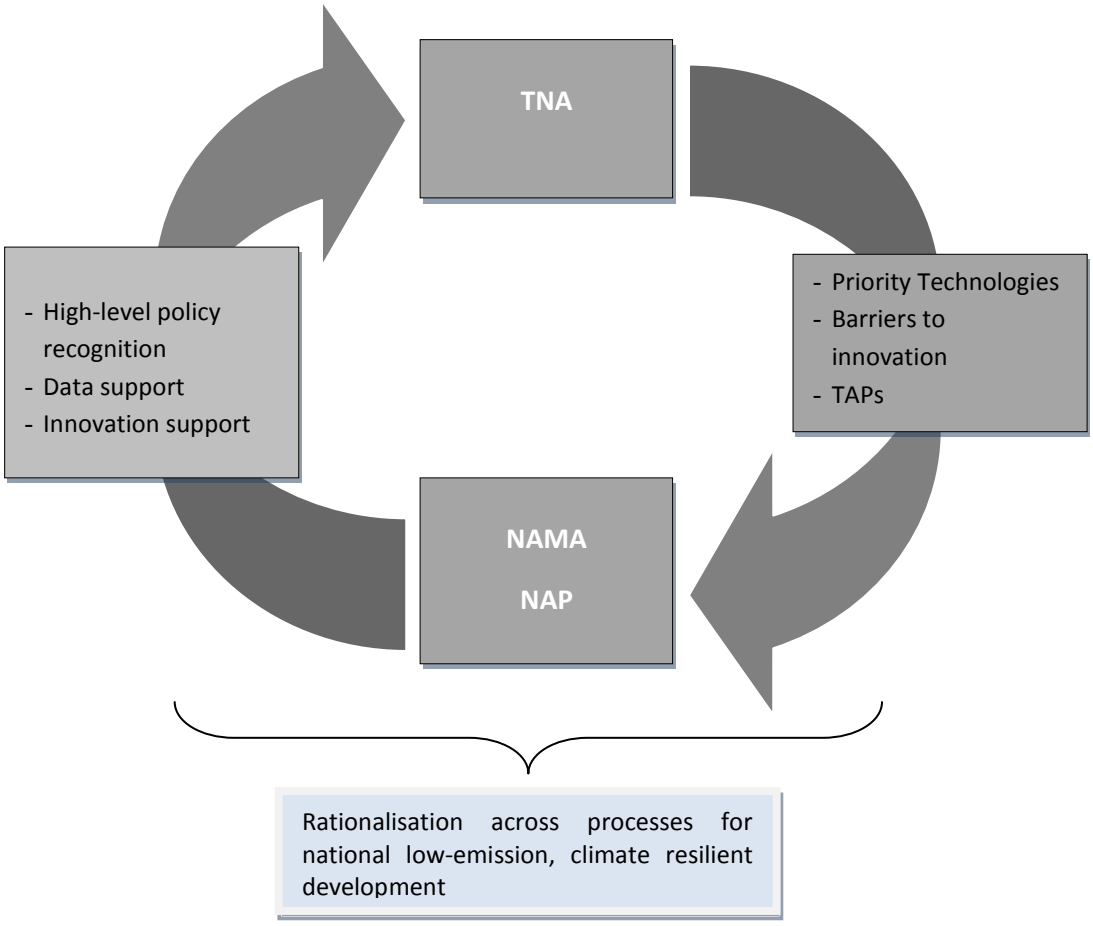

Figure 7-4. Possible impact of interlinkages between TNA, NAMA and NAP processes (UNFCCC, 2013d)

7.5.2. Potential relationship between the TNA process and the Technology Mechanism

As explained above in this chapter, technology transfer is an important aspect of the UNFCCC and the mechanism for how it would operate, the Technology Mechanism, has been transformed progressively as its importance for moving to a low-emission future has been realised. The Technology Mechanism is based on the activities of the former EGTT (see above) and was established at COP-16 (Cancun, 2010) to facilitate enhancement of technology transfer and development for mitigation and adaptation for achieving the full UNFCCC objectives. It will have a Technology Executive Committee (TEC) which "shall further implement the framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention …. adopted by decision 4/CP.7 and enhanced by decision 3/CP.13" (UNFCCC, 2011a, pp. 19, para. 119).

More specifically, the TEC will support developing countries in developing and enhancing capacity for RD&D, deployment and diffusion of technologies for mitigation and adaptation, as well as getting access to private and public investment funding. The second component of the Technology Mechanism is the Climate Technology Centre and Network (CTCN), which has a more operational focus as it "shall facilitate a Network of national, regional, sectoral and international technology networks, organizations and initiatives" (UNFCCC, 2011a, pp. 20, para. 123).

UNFCCC (2011) and UNFCCC (2013) explore possible interlinkages between the Technology Mechanism and TNAs, which were considered from two viewpoints. On the one hand, it was argued that the Technology Mechanism could support TNA processes, such as by providing developing country stakeholders with tools, guidance and access to networks. On the other hand, outputs from TNAs could provide useful information to the Technology Mechanism in terms of insights on countries' technology, finance and capacity needs. This viewpoints are further elaborated on below.

Possible interlinkages between the Technology Executive Committee and TNAs

Among the functions of the TEC is to "provide an overview of technological needs and analysis of policy and technical issues related to the development and transfer of technology for mitigation and adaptation" (UNFCCC, 2011a, pp. 19, para. 121a). This function could be supported by the TNA outputs as described above, such as: portfolios of prioritised technologies, insights in barriers within technologies' enabling environment, and identified capacity-building and finance needs. However, concluding general lessons from TNAs on mitigation and adaptation needs is an important challenge, since for technology transfer "the country context is important … as it determines the current enabling environment for the technologies, including the specific cultural and business habits, language, trust, networks and capacity available for successful transfers" (Gaast & Begg, 2012, p. 20). The challenge for the TEC, therefore, is to derive, to the extent feasible, homogenous lessons across heterogeneous TNA reports. Figure 7-5 illustrates this challenge for a hypothetical TNA example (showing, for instance, how generic lessons across adaptation areas and countries can be drawn).

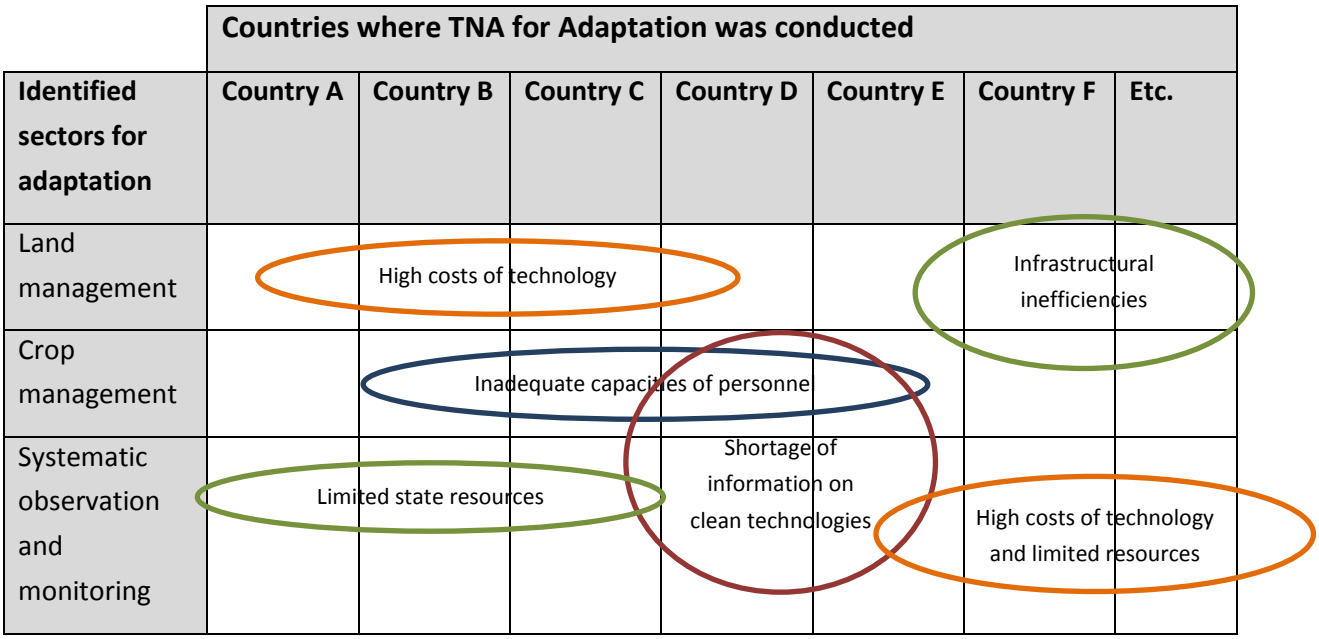

Figure 7-5. Hypothetical example with generalised conclusions on barriers for adaptation identified across TNAs for adaptation (UNFCCC, 2013d)

In addition, generalising across country-specific TNA outputs could help the TEC to obtain a global or regional picture of, *e.g.*:

- Technology needs for households and/or communities in, *e.g.*, Small Island Developing States;[133]
- Recommended actions to address the technology barriers in a region;[134] and
- Proven practices for implementing TNA outputs and improving the enabling environment for technology development and transfer which could be useful information for other countries.[135]

There are several ways to present synthesised information.[136] Figure 7-5 shows one example and Figure 7-6 presents a world map showing the example of how data from TNA reports (in this case, budgets estimated by countries for project ideas identified in their TNAs) can be presented (UNFCCC, 2013a).

This synthesized TNA information could also help the TEC to obtain insights in capacity needs for technology development and transfer in (sub)sectors and regions and how, *e.g.*, training programmes can be tailored towards these needs. This could contribute to a shared vision on tackling particular barriers in a coordinated manner as opposed to solving them individually in each country (UNFCCC, 2011a, pp. 20, para. 121e) (UNFCCC, 2011c). A similar broader picture can be obtained of (regional) finance needs for accelerating development and transfer of priority technologies for mitigation and adaptation. This information could possibly form inputs for the Finance Mechanism under the

[133] Potentially supporting the TEC function as described in UNFCCC (2011a, pp. 19, para. 121a).
[134] Potentially supporting the TEC function as described in UNFCCC (2011a, pp. 20, para. 121e).
[135] Potentially supporting the TEC function as described in UNFCCC (2011a, pp. 20, para. 121g).
[136] In accordance with the TEC functions as described in UNFCCC (2011a, pp. 19-20, para. 121a-g).

UNFCCC and financial support programmes outside the UNFCCC (Limaye & Zhu, 2012) (Christiansen, et al., 2012).

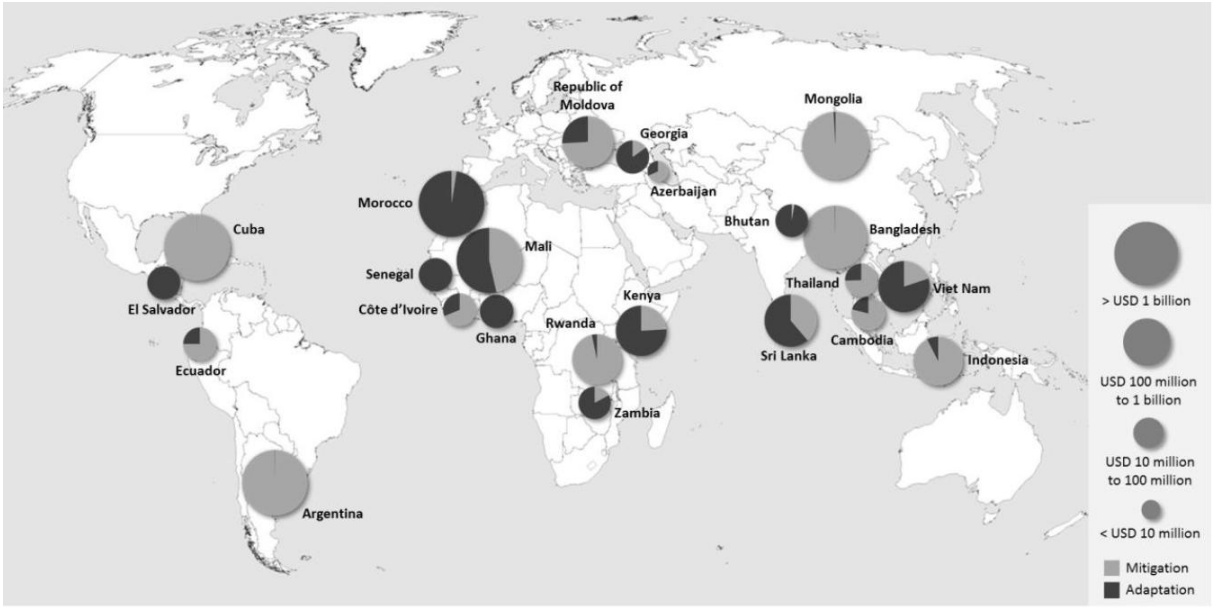

Figure 7-6. Example of data derived from project idea budgets as reported in TNAs (UNFCCC, 2013a)

The above insights could support formulating policy recommendations on technology development and transfer to the COP. Moreover, as TNAs directly link technology choices to national development priorities in developing countries, the TEC could obtain a clearer insight from TNAs on, *e.g.*, poverty alleviation, increased energy security of supply and improved health conditions in relation to climate policy objectives.

Finally, although the TNA process acknowledges the difference between prioritisation of technologies for mitigation and adaptation, experience with TNAs has shown that more methodological support may be required for preparing technology portfolios and technology action plans for adaptation. For instance, cost calculation for adaptation options are generally considered more difficult (and less tangible) than for mitigation options, which is also caused by the often non-market nature of adaptation options (Ministry of Sustainable Development and Tourism of Montenegro, 2012). The TEC could possibly explore these specific needs for adaptation and advice on improving the TNA process accordingly.

Possible interlinkages between the Climate Technology Centre and Network and TNAs

An important task of the CTCN is to provide support to developing countries in conducting TNAs and enhancing the implementation of TNA outputs in the form of technology projects, programmes or strategies (UNFCCC, 2013d, p. 12) (UNFCCC, 2011a, pp. 20, para. 123a(i)-(iii)). For instance, experts interviewed as part of a UNFCCC analysis on TNA good practice (UNFCCC, 2014f), in particular those with a MDB background, argued that the CTCN could help countries to find bilateral and multilateral funding sources, as well as tools and support for specific technology implementation

aspects. This implies that a TAP and project idea should be clear about actions needed for technology transfer within a country and characterise these in detail with identification of what kind of support is needed for TAP and project idea implementation, including 'how much?' and 'when?'. With this information, the CTCN can select support tools and services from its portfolio.

As a suggestion, during the interviews the example was given of how MDBs could look at requests coming from countries to the CTCN (UNFCCC, 2014f). Should they identify requests that would fit in the activities that they can support, they could consider responding to such requests. Possibly, this could also be the case for the propositions coming out of TNAs and TAPs, especially if banks' stakeholders have been involved in the TNA process.

Some of these suggestions on interlinkages between CTCN work and TNA processes may overlap with the possible relationship between TNAs and TEC activities as described above. However, whereas the TEC might have a stronger focus on generalised technology, finance and capacity needs for mitigation and adaptation across countries, CTCN's focus may be more on country-specific needs and support requests. Both the TEC and CTCN consolidated information from TNA reports might be included in their joint annual report (UNFCCC, 2012a, Decision 2/CP.17).

Towards an integrate climate and development approach

Figure 7-7 summarises the possible interlinkages between TNAs (and other processes discussed in this chapter) and the Technology Mechanism, as well as Capacity Building Framework, Finance Mechanism and Adaptation Framework. It suggests that, at the country level, (harmonised) processes identify options for mitigation and adaptation and actions for their enabling environment. To avoid duplication, these options and actions could be rationalised at the country level (*e.g.*, possibly as part of a TNA or a LEDS). These country strategies and plans for mitigation and adaptation could then form input for, *inter alia*, the TEC and the CTCN in support of an integrated approach for efficient country support for accelerated low-emission and climate-resilient innovation.[137]

In conclusion, this section has described how TNAs conducted at the level of individual countries can be rich sources of information for governments, relevant UNFCCC bodies and other stakeholders as it supports low-emission and climate-resilient innovation processes and can support NAMA and NAP processes, in terms of: embedding selection of mitigation and adaptation options in countries' economic, environmental and social priorities; prioritising technologies and measures for mitigation and adaptation that could be considered NAMAs or included in NAPs; and formulating technology action plans for acceleration of technology development and transfer which could form inputs for NAMA- and/or NAP-based strategies.

Harmonising NAMA, NAP and LEDS processes with TNAs could: strengthen high-level recognition of TNAs by high-level public and private sector decision makers in developing countries; streamline similar but not identical processes within countries by streamlining data collection and exchange (*e.g.*, between ministries); and support rationalisation of actions across TNA, NAMA, NAP and LEDS processes so that duplications and blind spots can be avoided.

[137] The diagram also includes, for the sake of completeness, the possible roles of the Capacity Building Framework, Finance Mechanism and the Cancun Adaptation Framework under the Convention in this process.

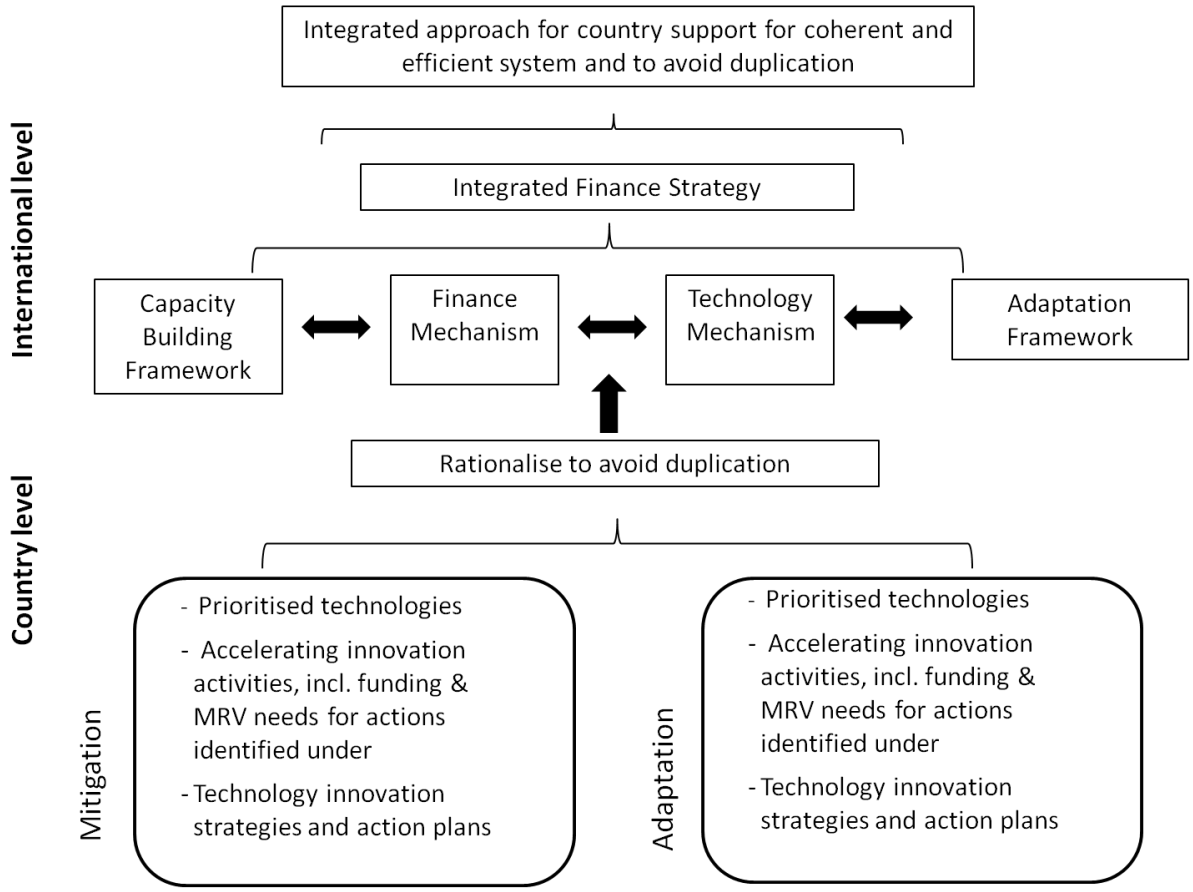

Figure 7-7. Generalising and rationalising climate and development strategies in countries and possible support from UNFCCC bodies (Gaast & Begg, 2012, p. 106)

The TEC could generate homogeneous lessons from the heterogeneous, country-specific TNA reports as a key information source for prioritising its activities under the Technology Mechanism. This work is supported by the secretariat's TNA synthesis reports (UNFCCC, 2013a). Based on completed TNAs, the TEC and CTCN could support countries in improving their enabling environments for development and transfer of TNA priority technologies at desired scales. This could support private (*e.g.*, financial and business communities), public and multilateral institutes in preparing finance and capacity building programmes and allocating support actions.

7.6. Discussion: Negotiations on a Post-2020 Climate Agreement in Light of Design, Process and Tactics Conditions

Contrary to the above chapters, the discussion in this chapter has been on a negotiation file which is still subject of international climate negotiations (with an important milestone being COP-21 in Paris in 2015). In this chapter, an approach has been discussed to international climate policy cooperation between countries which has emerged since 2009, after the failure to agree on a 'post-Kyoto'

agreement with (updated) QELRCs for main GHG emitting developed and developing countries. The approach takes national development priorities of (developing) countries as a starting point and explores how these can be realised with low GHG emissions and enhanced climate resilience. It has been suggested in the chapter that such an embedding of climate policy measures in national development planning processes would strengthen developing countries' willingness to engage in global climate policy cooperation. This section explores how the three basic conditions identified for this study in Chapter 1 would need to be met for a successful negotiation outcome based on this approach.

Meeting basic condition 1: agree on an inclusive climate policy regime with developed and developing countries

As a starting point, this chapter has concluded that, despite the differences between developed and developing countries and how these have complicated climate negotiations in the past, both at higher and more technical negotiation levels, an effective international climate policy regime will need the inclusion of developed and developing countries. It has been suggested that such an inclusive climate policy regime would need to consider climate change mitigation and adaptation measures in light of individual countries' national economic, social and environmental development priorities. This chapter has suggested what such an approach could look like by examining the experiences since 2001 with conducting technology needs assessments under the UNFCCC (TNAs).

When analysing the negotiation processes at COP-15 (Copenhagen) and following COP sessions, it has become clear that the negotiations on a future, post-2020 climate policy regime are characterised by similar game-theoretical aspects as could be observed during high-level negotiations on the UNFCCC and Kyoto Protocol during the 1990s (as discussed in Chapter 3). In particular, the divide between developed and developing countries still exists. Moreover, negotiations are still hampered by free-rider risks and public good characteristics of climate change mitigation actions, which are extravagated by the absence of an overarching international disciplinarian. Two important differences with the climate negotiations of the 1990s are that:

1) Scientific information about emerging climate change and related risks for global ecosystems and people's well-being has considerably grown since the 1990s (*e.g.*, IPCC, 2013), so that nowadays a long-term target (*i.e.* the 2^{o}C threshold) forms a guidance for negotiations and has been included in a COP decision (UNFCCC, 2011a); and
2) A relatively sharp dividing line between Annex I and non-Annex I Parties does not do justice to the economic and social diversity of countries within both groups, while some of the non-Annex I Parties have become important GHG emitters.

In terms of Figure 1-3 in Chapter 1, the process since 'Copenhagen' has shown that achieving the 'ideal' negotiation outcome A is still complex, for largely similar reasons as in concluded in Chapter 3; even though negotiations are more strongly guided by scientifically supported targets, countries seem even more diverse in terms of taking (or perhaps better: sharing) responsibilities. Consequently, only an outcome such as B in Figure 1-3 was feasible at COP-9 (leading to a negotiation failure). Since COP-16 (Cancun, 2010), negotiations have moved to an outcome similar to C in Figure 1-3, whereby both developed and developing countries present pledges with GHG emission reduction or

limitation measures that they are willing to undertake domestically.[138] However, outcome C is not a satisfactory outcome, either, as the pledged measures taken together are still far away from what is required for reaching the 2°C target (UNEP, 2014), and still several countries have not submitted their pledges.

This chapter has suggested an approach which could support negotiations towards an outcome D as in Figure 1-3:

- By prioritising technologies and measures for mitigation and adaptation in light of countries' longer term development priorities, and
- Organising, as part of an international climate regime, financial, technical and capacity building support for acceleration of innovation within countries towards low-emission and climate-resilient development strategies, so that
- Countries have a stronger incentive to undertake stronger actions for mitigation and adaptation than they would have done under business-as-usual circumstances, as enhanced international financial, technical and capacity building support enhances the affordability of actions for mitigation and adaptation which are in countries' development interests.

Bottom-up processes, such as discussed in this chapter, which focus on embedding climate measures in national development objectives, could therefore contribute to a broader international climate coalition which is prepared to take stronger GHG emission reduction measures, as these actions support both mitigation and adaptation and national development planning.

In order to bring negotiation outcome D as close as possible to 'ideal' outcome A (thereby reducing or even closing the gap towards the 2°C target), the climate policy regime is recommended to:

- Generalise and rationalise, as explained in this chapter, countries' technology, finance and capacity building needs so that international support (*e.g.*, through MDB and other international supporting organisations) can be more efficiently and effectively organised towards countries' needs.
- Build in the negotiation process regular 'milestone measuring points' for evaluating the adequacy of global actions towards the 2°C target (similar to the UNEP, 2014, Emissions Gap Report approach) and suggest additional actions to support countries in undertaking climate change mitigation and adaptation measures in light of their development priorities.

Meeting basic condition 2: an enabling negotiation process for embedding climate policy measures in national development planning

As a result of the Bali Plan of Action (UNFCCC, 2008b), climate negotiations have taken place with a focus on a number of building blocks or pillars for a new climate policy regime: mitigation, adaptation, technology transfer, and finance. In the 2010 'Cancun Agreements', capacity building has been described as cross-cutting, but from the discussion in this chapter it has become clear that also mitigation and adaptation activities could overlap and that there are cross-cutting issues for these building blocks as well. For example, there are overlaps in areas such as water resource use and in

[138] At COP-19 (Warsaw) the concept of Intended Nationally Determined Contributions (INDC) was introduced for developed and developing countries to propose voluntarily climate change mitigation measures (Earth Negotiations Bulletin, 2013).

facilitating energy access for the poor to alleviate poverty. Moreover, countries may not have either just mitigation needs or just adaptation needs, so that initiatives developed under, *e.g.*, the Technology Mechanism and Adaptation Framework could interfere with each other or duplicate activities, as they may not be aware of the wider range of activities in the country. This could lead to wastage in terms of funding allocation. An additional concern is that the processes undertaken by different institutions will diverge over time to the extent that syntheses will become difficult and meta-analysis at the regional or global scale of doubtful value.

As a consequence, in order to meet basic condition 2 of an enabling negotiation process towards an outcome D or even A in Figure 1-3, there is a need to ensure an integrated approach in climate negotiations for supporting mitigation, adaptation, technology transfer and finance so that coherent actions can be formulated and separation of outputs to different institutions avoided. This integration could take place through a rationalisation process at the UNFCCC level of mitigation, adaptation, capacity building, technology development and transfer and finance actions to avoid, *e.g.*, the need for developing countries to do multiple separate exercises and to conduct institutions and processes efficiently and where possible in a harmonised way. This would support that the outputs for mitigation and adaptation strategies and action plans will deliver the sustainable development benefits for countries, with access to advice, networks, finance, and overall capacity building, such as education, supporting economic, legal and technical services, and improved enabling environments for adoption of measures for mitigation and adaptation in the timescales and scale required.

An example of what an integrated policy making process could look like is the work of the TEC which has assessed interlinkages between TNAs and other processes under the UNFCCC (*e.g.*, NAMA, NAP) as explained in this chapter. At its fifth meeting (March 2013), TEC discussed "Interlinkages between TNAs and other processes under the Convention," based on which it established a working group on interlinkages to prepare a Technology Brief for further policy discussions (Technology Executive Committee, 2013). Recommendations formulated in such briefs are considered by the SBSTA and eventually the COP to become formal policy steps. As such, the negotiation process follows the similar COP-level steps as explained in the earlier chapters, but for exploring the interlinkages between several bottom-up climate and development-based climate policy making processes, the mechanisms established under the four pillars of the Bali Plan of Action have a strong role to play in examining technically what harmonising or even merging processes or process steps could look like, for effective and efficient country support for low-emission and climate-resilient domestic strategies.

Meeting basis condition 3: decisive tactical and facilitating aspects towards a future climate policy

A crucial point during negotiations on a post-Kyoto climate policy regime has been the failure to agree on quantified emission reduction commitments for major emitting countries at COP-15 in Copenhagen. After the meeting, there were several comments on the process at COP-15 itself and criticism on the Danish Presidency of the session (JIN, 2010). However, already before COP-15, negotiations had been extremely difficult and slow and the 'Copenhagen Accords', which Parties failed to adopt, did not contain legally binding quantified emission reduction commitments. Therefore, already before COP-15, prospects for a continuation of the Kyoto Protocol with top-down quantified

commitments were weak. Instead, after 'Copenhagen', increasing attention was paid by negotiators on proposed bottom-up measures such as NAMAs and NAPs.

Of tactical importance in this respect is that Parties have already gained experience with such bottom-up actions under the Convention. One example is the CDM with its objective to support developing countries' sustainable development (see Chapters 4 and 5). Although it can be doubted whether this latter objective has been achieved for most CDM projects (ENTTRANS, 2008), the CDM has contributed to building confidence among developing countries that such a bottom-up approach can work. Moreover, over 120 developing countries have experience with identifying climate technology needs and required actions for technology implementation through TNA processes.

It may also be important for countries that a process as described in this chapter can be applied flexibly, as long as a number of key conditions for implementation are met. The TNA approach described in this chapter is an example of structured process, but with full decision flexibility left to the countries concerned. The stepwise TNA approach was a response to earlier TNAs (96 countries between 2002 and 2009) for which such structured stepwise guidance was not available and which made it difficult for countries to assess technology needs in light of their national development circumstances (UNFCCC, 2009b). The latest round of TNAs (between 2009 and 2013) has shown that a step-wise guidance provides a better analytical structure for countries, while it still leaves countries sufficient scope for organising each step according to national preferences (UNFCCC, 2014f).

Key tactical conditions for successful implementation of TNA or NAMA and NAP results (UNFCCC, 2014f) are that these processes are recognised by key national planning ministries as an important source for national planning and that these ministries express willingness to make resources available for implementation of the identified measures for mitigation and/or adaptation. Another key condition for implementation is that the processes produce clear business cases for each identified measure for mitigation and adaptation so that potential investors (*e.g.*, the national government, multilateral development banks, private investors, banks) can assess the economic feasibility of the investment.

NAMAs are more 'mandatory' than TNAs in the sense that developing countries have agreed under the 2010 'Cancun Agreements' that they will undertake nationally appropriate mitigation actions, but the sizes, extent, budgets, *etc*., of these actions have all remained undefined and have therefore been left as a prerogative for developing countries. Tactically, therefore, the recent negotiation steps since 'Copenhagen' in 2009 have enabled developing countries:

- to play an increasingly active role in future climate policy making, even in the absence of top-down legally-binding commitments,
- with internationally organised support to bottom-up climate change mitigation and adaptation actions, that are
- embedded in domestic environmental, economic and social development priorities.

These tactical aspects could eventually support the formation of a larger international climate policy coalition.

The above design, process and tactical aspects are summarised in Table 7-3.

Table 7-3. Design, process and tactical/facilitating negotiation aspects of design bottom-up climate policy regime with climate measures embedded in development goals

	Description of basic condition in negotiation file	How to meet basic condition
1. Design of policy (instrument)	*Scope*: • Climate change mitigation and adaptation measures are identified in light of countries' development priorities • These measures can be used as inputs for NAMAs and NAPs for stronger climate change measures based on development planning *Principles*: • Climate change mitigation and adaptation are likely to be more acceptable for countries if they are in line with their national development planning • Climate policy measures remain largely voluntary *Goals*: • Policy measures leading to climate policy measures, which support closing the 'Emissions Gap' • Broader participants by developing countries in international climate policy coalition *Means*: • Bottom-up processes such as TNA, NAMA and NAP • Supported by mechanism under the UNFCCC	• Integrate country-level decisions on climate change mitigation and adaptation actions in countries' national sustainable development planning and priorities • Generalise and rationalise countries' technology, finance and capacity building needs so that international support can be more efficiently and effectively organised towards countries' needs • Build in the negotiation process regular 'milestone measuring points' for evaluating the adequacy of global actions towards the 2°C target
2. Enabling negotiation process	*Meetings*: • Annual COP sessions • SBSTA technical negotiations • Sessions of Technology Executive Committee, Green Climate Fund, Adaptation Fund, *etc*. *Strategy*: • Current climate negotiations focus on four building blocks • These blocks have their own negotiation 'silos' • It is recommended to rationalise across these 'silos' to avoid overlaps and arrange efficient and effective international capacity, financial and technological support *Responsibility:* • COP is responsible for negotiation process with milestones for a post-2020 climate agreement at COP-21 • Each 'silo' has its own executive bodies for spurring contributions to international climate policy regime	• There is a need to ensure an integrated approach in climate negotiations for supporting mitigation, adaptation, technology transfer and finance so that coherent actions can be formulated for climate and development, and separation of outputs to different institutions avoided • This implies that UNFCCC bodies responsible for the building blocks of a new climate regime explore harmonisation of their work
3. Decisive tactics and facilitation	• Failure at COP-15 to agree on a climate regime with new QELRCs led to increased focus on embedding climate actions in national economic and development planning • CDM, TNA, NAMA and NAP provide vast experience with this approach, as well as organising domestic 'ownership' of decision-making process for climate and development • Integrating climate actions in national development planning can support closing Emissions Gap (towards 2°C)	• Parties have already gained experience with bottom-up actions under the Convention (TNA, NAMA, NAP and CDM) • These processes are recognised by key national planning ministries

Chapter 8. Summary and Conclusions

This study has examined five climate negotiation files (covering the period from the early 1990s until the present) in order to obtain a better understanding of how countries formulate their negotiation positions and how these positions are brought together in an international climate policy coalition. It has been argued that since climate change is a global issue, effective climate policy making also requires a global participation of countries. However, such an 'ideal' situation is difficult to achieve as countries may have incentives for free-rider behaviour while countries cannot be excluded from the benefits of GHG emission reduction efforts by other countries. According to game-theoretical insights, in the absence of an overarching international authority, the size of a policy coalition will be determined by the number of countries for which the benefits of joining the coalition outweigh the costs.

Climate negotiations since the early 1990s have also been complicated by an initial lack of scientific knowledge of the impact of human activities on global climate systems and what could be the damage of such an impact. As a result, climate negotiations could not be clearly guided by an overall, scientifically substantiated climate policy goal. In fact, determining climate policy goals became a subject of negotiations.

As a reference point, this study has described what an 'ideal' climate policy regime could look like, with climate change policy measures determined in order to avoid irreversible climate change damage (UNFCCC, 1992a), which are globally supported by countries. In actual practice, however, climate negotiations often develop in a direction where initially proposed measures (*e.g.*, targets) are only supported by a subset of countries. In order to gain the support from more countries, negotiations usually lead to a scaling down of climate policy measures (*e.g.* lower GHG emission reductions). In a final negotiation stage, solutions are tried to be found to achieve a package with climate policy measures on which countries can reach international consensus.

Based on this observation, this study has formulated the hypothesis that for successful climate policy negotiations the following three basic conditions need to be met. First, the design of the policy package must reflect the preferences of different (groups of) countries and address the game-theoretical considerations that countries may have. Second, the negotiation process needs to enable consideration of country positions during the several negotiation stages and modify the policy design accordingly. Third, during the negotiation process, the course of negotiations needs to be changed several times in order to work towards stricter climate policy measures and global support. Such (tactical) manoeuvres can be stimulated by, for instance, personalities of key negotiators, emerging scientific evidence or efficient support by facilitating services such as the UNFCCC secretariat.

In this study, the first research question of whether and how these three basic conditions have been met during international climate negotiations since the earlier 1990s, has been addressed by examining four past negotiation files and one ongoing negotiation process. The latter file aims at achieving a future global climate policy regime, the main design of which is scheduled to be completed by the end of 2015 in Paris. The files have been selected with the objective to test whether and how the three basic conditions have been met at different negotiation levels, ranging from a highly political negotiations, about the overall shape of a global climate policy regime, including decisions on country

responsibilities and commitments, to more technical negotiations about modalities and procedures for implementation of policy instruments.

The first file examined in this study has been the preparation, adoption and entry-into-force of the Kyoto Protocol during 1995-2005 (Chapter 3). The Kyoto Protocol has been the first specification of the UN Framework Convention on Climate Change (UNFCCC, 1992a). During negotiations, developing countries called upon the principle of 'common but differentiated responsibilities' and argued that industrialised countries had to take the lead on reducing their GHG emissions. Several industrialised countries, in particular the USA, protested against this position by pointing at several rapidly industrialising developing countries with growing GHG emissions. The compromise achieved at 'Kyoto' was that only industrialised countries adopted legally binding emission reduction commitments, while developing countries were exempted from such commitments. This deal could be reached as developing countries, among others, agreed on a global application of GHG emissions trading mechanisms, which enabled industrialised countries to comply with their commitments cost-effectively. Eventually, it turned out that basic condition 1 was not fully met for the Kyoto Protocol as the agreement did not correctly reflect domestic positions of participating countries (the most important of them being the USA, which withdrew from the protocol in 2001) while its weak compliance regime provided little guarantee that countries would meet their commitments.

In terms of negotiation process, the UNFCCC and Kyoto Protocol negotiations took place with several small steps at the time. During negotiation sessions during 1989-1992, progress was slow, but taken together it brought about a decision at the 1992 UN Earth Summit on the UNFCCC. Negotiations continued with small steps towards the first Conference of the Parties (COP-1) in Berlin 1995, where a mandate was agreed to negotiate on further specifications of the UNFCCC in the form of a Protocol. For this mandate the Ad Hoc Working Group on the Berlin Mandate (AGBM) was formed which met twice a year. This process was also characterised by taking several small steps each time, whereby negotiations initially focussed on procedural steps towards reaching an agreement, followed by discussing negotiation inputs from Parties. By the time of COP-3 in Kyoto (1997), political pressure had increased so negotiation tactics could become decisive for reaching a final agreement. During this negotiation process, basic condition 2 was met.

An important tactical aspect of the negotiations leading to the Kyoto Protocol was the change in the position of the US delegation at COP-3, which was initially determined by the US Congress resolution (Byrd-Hagel) not to agree on a protocol without meaningful participation by rapidly growing developing countries. At COP-3, the G-77&China group managed to remain exempted from quantified commitments in return for which they supported the emissions trading mechanisms Joint Implementation (JI) and the Clean Development Mechanism (CDM). The latter had been a US desire throughout the negotiations. The US delegation was also satisfied with the agreed multi-year commitment period and the accounting of GHG emission reductions across six GHGs, rather than only carbon dioxide. Both aspects had been suggested by the US proposal for the Kyoto Protocol. In this respect, basic condition 3 was met.

Other key tactical aspects during the Kyoto Protocol negotiation process were: the personalities of key negotiators who managed to translate slow progress at one session into an acceleration of negotiations at another session; the emerging scientific (IPCC) knowledge on the impact of anthropogenic GHG emissions on global climate systems; the role of the UNFCCC secretariat in terms of supporting the

negotiation process with technical papers and provision of timely information; the handling of the 'Kyoto Protocol crisis' by the EU troika delegation when in 2001 the US President George W. Bush decided to withdraw from the protocol; and the link between the decisive Russian ratification of the Kyoto Protocol and the Russian desire to become World Trade Organisation member which the EU and Russian negotiators established during 2004. These aspects and their impact on the negotiations made that basic condition 3 was met.

The second negotiation file analysed has been the development and operationalisation of JI, which enables countries with GHG emission reduction targets to achieve these (partly) on the territory of other countries (Chapter 4). Countries with high GHG emission reduction costs could, with JI, invest in emission reduction projects in countries with lower costs. From a climate perspective, the location of such investments does not make a difference as GHGs mix even evenly in the atmosphere. This contributed to meeting basic condition 1 in the final negotiation outcome.

During the negotiations between 1995 and 1997, JI was frequently linked with the overarching, more political 'Kyoto' negotiation process, as developing countries considered JI a opportunity for industrialised countries to avoid domestic investments. In this respect, it was not the suitability of JI as a climate policy instrument that drove its negotiations, but its possible implications at higher policy level negotiations. By the time of COP-1 (1995), JI had become so strongly interlinked with negotiations on which countries should take emission reduction commitments that it was, for tactical reasons, (temporarily) taken out of the AGBM negotiation process. Instead, JI negotiations continued in a more technical context whereby a pilot phase for JI (called Activities Implemented Jointly) was established.

At COP-3, JI appeared again during the negotiations as an instrument to enable developed countries to purchase carbon credits through projects all over the world and thus to lower the costs of complying with their quantified emission reduction commitments. This inclusion of the JI concept (in the form of JI among developed countries and the CDM between developed and developing countries) was a key breakthrough factor for achieving success during the COP-3 negotiations. The flexibility of the negotiation process on JI and the described tactical manoeuvres, by temporarily moving the concept to more technical negotiation processes so that it could be re-introduced during the final stages of Kyoto Protocol negotiations, are a clear indication that basic conditions 2 and 3 were met.

The third file (Chapter 5) focussed on another, more technical negotiation level by examining the process of developing modalities and procedures for the Kyoto flexibility mechanisms JI and CDM. These negotiations focussed on technical issues such as accounting of GHG emission reductions and what types of project investments to include in JI and CDM portfolios. The main issues during these negotiations were how to determine the additionality of claimed emission reductions and how to determine a baseline as a reference for calculating project-level GHG emission reductions. Basic condition 1 was met during these negotiations, as the policy outcome enabled full use of JI's cost-effectiveness potential, while acknowledging (and providing safeguard measures for that) that widespread application of JI could postpone pathways in industrialised countries towards low GHG emission growth and that too flexible accounting rules may result in non-additional emission reductions or too strict rules in missed JI opportunities.

The process for negotiating JI and CDM modalities and procedures during 1998 and 2001 was largely similar to that before 'Kyoto' with technical discussions taking place at sessions of the UNFCCC Subsidiary Bodies (SB) with decisions taken or endorsed by the COP. Once the negotiation process on the 'Buenos Aires Plan of Action' of 1998 had been completed with the 'Marrakech Accords of 2001, most negotiations on JI and CDM issues took place at the levels of SB, the CDM Executive Board and the JI Supervisory Committee. Basic condition 2 was met for this negotiation file with respect to the flexibility that the process provided to have political and technical issues addressed by the levels where these issues belonged. However, basic condition 2 was not fully met when the COP *de facto* transferred part of its political decision making role to the more technical level of the CDM Executive Board, by leaving it to the board to decide on the strictness of handling additionality and baseline methodologies for CDM projects.

In terms of tactics, after the US withdrawal from the Kyoto Protocol in 2001, the EU, which initially wanted to limit the use of JI and CDM, took a more flexible position on this. However, basic condition 3 was only partly met for this file due to the rather strict interpretation by the CDM Executive Board of the modalities and procedures for JI and CDM in the 'Marrakech Accords', which continued for almost three years. As a result, the first CDM projects were only registered by the Executive Board in 2005, which was almost five years after the eligibility of crediting CDM projects under the Kyoto Protocol and more than three years after the Netherlands Government and the World Bank's Prototype Carbon Fund had contracted their first CDM projects.

The fourth negotiation file (Chapter 6) has been the most technical of all files examined. It has focussed on methodologies and principles for standardising GHG accounting procedures for JI and CDM projects. Motivations for standardised procedures were to define methodologies which would ensure that GHG emission baselines are sufficiently project-specific and applicable to a multitude of projects. It has been concluded that multi-project baselines can be especially useful in case it is not entirely clear what a JI or CDM project actually replaces, such as greenfield projects based on renewable energy technologies. Through baseline standardisation also the scope for smaller scale projects could be broadened as it reduces the need for costly project-specific baselines. Finally, with multi-project baselines also the aspect of 'gaming' ('talking up' a baseline GHG emission level in an attempt to claim more emission reduction credits) could be addressed, since individual project developers cannot change the standardised baseline. With this outcome, basic condition 1 was met for this negotiation file.

The main policy development framework for JI and CDM project-baseline determination has been formed by the CDM Executive Board and JI Supervisory Committee which have been responsible for approving GHG emission baselines and monitoring methodologies developed by project developers and consolidating these for application to multiple projects. The CDM Executive Board has been supported on that by methodological panels (established for large-scale and small-scale projects, forestry projects, and CDM programmes of activities), which contributed to meeting basic condition 2.

Important tactical aspects which accelerated the development of multi-project baseline policies for JI and CDM have been the following. First, multi-project baseline negotiations were widely supported by research projects, such as Karta et al (2002) and PROBASE (2003), which made strong cases for baseline standardisation, by pointed at cost saving and integrity improvement benefits. Second, early investors in JI and CDM projects, such as the World Bank Prototype Carbon Fund and the

Netherlands' ERUPT and CERUPT programmes developed their own guidelines for baseline determination, including procedures for standardising baselines. Several of the elements in these programmes have later been used for JI and CDM approved baseline and monitoring methodologies. Third, on the basis of an number of approved project-specific baselines, the CDM Executive Board started to consolidate baselines for multiple use by other projects, which was a clear step in the direction of adopting standardised baselines. Finally, development of baseline and monitoring methodologies for JI and CDM project was strongly accelerated through the linking of JI and CDM to the EU Emissions Trading Scheme, which triggered extra demand for JI and CDM projects and (standardised) methodologies. These aspects contributed to meeting basic condition 3 in this file.

With a view to research question 2 in this study, in Chapter 7, the ongoing process of negotiating a new climate policy regime for the period after 2020 has been examined with the objective to conclude how the three basic conditions identified in this study would need to be met for a successful negotiation result. It has been described how negotiations on a new set of quantified GHG emission reduction commitments for major emitting developed and developing countries failed during the negotiation period 2005-2009 and how instead a (voluntary) 'pledge and review' process was initiated after that. Analysis by the UNEP Emissions Gap project, however, shows that these pledges taken together will not be enough to reach the goal of limiting global average temperature increase to 2^oC (above pre-industrialised times levels) (UNEP, 2014).

In order to meet basic condition 1, it has been argued in Chapter 7 that an effective climate policy regime will need the inclusion of both developed and developing countries. It has been suggested that such an inclusive climate policy regime would be enhanced if (developing) countries were supported in considering climate change mitigation and adaptation measures in light of their national economic, social and environmental development priorities. What such a country-driven, bottom-up approach could look like has been illustrated in the chapter by examining country experiences since 2001 with conducting technology needs assessments under the UNFCCC (TNAs).

Furthermore, for meeting basic condition 1, Chapter 7 has suggested that an international climate regime would need to organise financial, technical and capacity building support for acceleration of innovation processes within countries towards low-emission and climate-resilient development strategies. This could create an incentive for countries to undertake more GHG emission reduction measures for climate and development, as this would enhance the affordability of these actions. Moreover, a desired negotiation outcome would be regular 'milestone measuring points' for evaluating the adequacy of global actions towards the 2^oC target (similar to the UNEP, 2014, Emissions Gap approach) and suggesting additional actions to support countries in undertaking climate change mitigation and adaptation measures in light of their development priorities.

In terms of policy making/negotiation processes, it has been argued in Chapter 7 that, for meeting basic condition 2, comparable or similar processes, such as TNAs and processes under the UNFCCC to identify nationally appropriate mitigation actions (NAMAs) and to formulate National Adaptation Plans (NAPs) need to be rationalised in order to avoid 'institutional congestion' within developing countries and data competition between processes and to support that outputs from one process can be used as inputs for other processes. For instance, a portfolio with priority technologies for mitigation and adaptation developed as part of a TNA could be considered by countries as NAMAs or inputs for NAPs. As explained in Chapter 7, an important role in this respect can be played by multilateral

development banks and UNFCCC bodies such as the Technology Mechanism, Adaptation Fund and Green Climate Fund.

The failure of the 'Copenhagen' negotiations in 2009 on a prolongation of the Kyoto Protocol commitment period structure with quantified emission reduction commitments for major emitting countries has been an important tactical aspect towards a negotiation focus on a 'pledge and review' approach to which country-driven, bottom-approaches (such as TNA, NAMA and NAP) could further contribute. Basic condition 3 can further be met by considering the experience with over 8000 CDM projects, TNAs in over 120 developing countries in multiple rounds since 2002, as well as ongoing experiences with NAMA and NAP formulation. These experiences have contributed to building confidence among developing countries that TNAs can be linked to NAMA and NAP processes (Technology Executive Committee, 2013). Key tactical conditions for successful implementation of TNA or NAMA and NAP results are that these processes need to be recognised by key national planning ministries as an important source for national planning and that these ministries express willingness to make resources available for implementation of the identified measures for mitigation and/or adaptation (UNFCCC, 2014f).

Concluding remarks

The analysis of the negotiation files in this thesis has made clear that with respect to the design of an international climate policy regime the main challenge has been to agree on globally supported GHG emission reduction measures. In the Kyoto Protocol, this condition could only be met to a limited extent as only industrialised countries adopted quantified GHG emission reduction commitments. Developing countries participated in emission reduction actions through, among others, the CDM. In the other files, the divide between developed and developing countries also became evident as the negotiations on the concept of JI were largely influenced by developing countries' reluctance to agree with wide opportunities for developed countries to achieve their commitments through JI projects. Also the discussions on the modalities and procedures for the Kyoto mechanisms JI and CDM were characterised by disagreements on how much flexibility developed countries would enjoy when complying with their quantified commitments.

In Chapter 7, it has been argued that the likelihood of effective climate policy measures adopted by a wide group of countries, including developing countries, increases if climate measures are more closely embedded in countries' longer term sustainable development priorities and/or mainstreamed in existing development policies. In combination with support to countries from several mechanisms and frameworks under the UNFCCC, as well as from other international institutes such as multilateral development banks, this bottom up approach could lead to stronger incentives for a larger group of (developing) countries to undertake climate policy actions than through a Kyoto Protocol-type of agreement with national GHG emission ceilings.

The analysis of the negotiation files in this study has made clear that next to designing the climate policy framework, the process of negotiations is of crucial importance for success. The UNFCCC negotiations have been characterised by high-level negotiations taking place annually at the COP sessions, which are supported by more technical negotiations at Subsidiary Body sessions. For achieving important milestones, the COP establishes ad-hoc working groups with mandates to prepare key negotiation documents (*e.g.*, AGBM for the Kyoto Protocol or Bali Plan of Action for a post-

Kyoto climate regime). Negotiations on more technical topics, such as Kyoto flexibility mechanisms and GHG accounting processes for JI and CDM projects, usually take place under auspices of the Subsidiary Bodies and the CDM Executive Board and JI Supervisory Committee.

A key characteristic of climate policy negotiations at different levels is that they usually take place through several small steps with an initial focus on negotiation procedures, followed by assessing Parties' proposals and concluded by attempts to agree on a negotiation outcome. The small-steps approach enables achievements of relatively small successes that are easier to adopt by a larger group of countries than aiming a large breakthroughs requiring relatively strong compromises at once by some (groups of) Parties. This does not mean, however, that the small steps straightforwardly lead to a larger scale agreement. For instance, the Kyoto Protocol was prepared by a range of AGBM meetings, but the eventual agreement at Kyoto was still a relatively big step in comparison with the latest session of AGBM before 'Kyoto' (which actually limited the eventual ratification of and compliance with the protocol by leading industrialised country Parties). Nonetheless, the several small AGBM steps before 'Kyoto' contributed to building a basis for an agreement at 'Kyoto'.

Finally, it has become clear that several tactical aspects can play a crucial role in achieving negotiation successes. Such tactics can vary from the aspect of personalities of key negotiations to the importance of scientific reports on anthropogenic impact on global climate systems, as the following examples of tactical aspects discussed in this thesis illustrate. The publication of the IPCC second assessment report in 1995 made clear that more urgent climate policy actions were needed and this supported the decision on the Berlin Mandate. The role of chair Raul Astrada during AGBM and COP-3 negotiations was important for bringing positions of G-77&China and developed countries together in the Kyoto Protocol with quantified commitments for developed Parties and a global scope for GHG emissions trading, including projects in developing countries. The role of the EU during negotiations after the US withdrawal from the Kyoto Protocol process in 2001 was decisive for keeping the protocol alive. Finally, the procedural tactical move at COP-1 to temporarily take the concept of JI out of the AGBM negotiations and transfer it to the level of the Subsidiary Bodies, as the concept of Activities Implemented Jointly, eventually enabled the inclusion in the Kyoto Protocol of JI among developed and the CDM between developed and developing countries.

The detailed examination of climate negotiation files since the early 1990s has shown that for negotiation success or failure the 'devil can be in the detail'. A good design of a policy and policy instruments is needed for addressing all details that are related to international climate policy making including combining different preferences of developed and developing countries in an international climate coalition. The negotiation process needs to enable that the broad range of often detailed (differences in) viewpoints of all Parties are heard and incorporated in the negotiation texts, which implies that steps are preferably small and frequent to do justice to the details related to global climate policy making rather than large and less frequent steps. Finally, climate policy negotiations need to be open for allowing tactics to change the course of the negotiations by incorporating timely scientific knowledge in discussions, accept 'defeats' when successes are not feasible and adequately respond to changing economic and political contexts. Since climate policy making has not been straightforward since the early 1990s and will become increasingly complex over time with stronger embedding of climate change measures in domestic sustainable development priorities, meeting the three basic

conditions described in this thesis will remain a minimal requirement for addressing the negotiation details that can both make and break pathways toward climate policy successes.

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Samenvatting

Klimaatverandering is onderwerp geweest van internationale onderhandelingen sinds de jaren tachtig van de vorige eeuw. Het eerste resultaat hiervan was het Raamwerkverdrag voor Klimaatverandering (UNFCCC) waarover in 1992 overeenstemming werd bereikt tijdens de VN-conferentie over milieu en ontwikkeling (*the Earth Summit* in Rio de Janeiro). Vijf jaar later ontstond, tijdens een VN-klimaattop in Kyoto een klimaatprotocol waarin het UNFCCC verder werd uitgewerkt. Voor industrielanden bevatte dit Kyoto-protocol gekwantificeerde en juridisch bindende verplichtingen voor het terugdringen van de uitstoot van broeikasgassen. In 2009 werd in Kopenhagen geprobeerd een nieuw klimaatverdrag te sluiten met nieuwe afspraken over uitstootvermindering van broeikassen. Ditmaal zouden deze verplichtingen ook moeten gelden voor snel groeiende ontwikkelingslanden zoals China, India en Zuid-Afrika. De onderhandelingen in Kopenhagen mislukten echter, waarna een nieuw onderhandelingstraject werd gestart dat in 2015, tijdens de VN-klimaattop in Parijs, moet leiden tot een mondiale klimaataanpak, dat vanaf 2020 zal moeten ingaan.

In dit proefschrift zijn vijf klimaatonderhandelingsdossiers bestudeerd vanaf 1990 met als doel te onderzoeken aan welke voorwaarden klimaatonderhandelingen ten minste moeten voldoen om te resulteren in internationaal breed gedragen klimaatmaatregelen. Een basisaanname bij het onderzoek is geweest dat klimaatverandering een mondiaal vraagstuk is dat een mondiale aanpak vereist. Aangezien broeikasgassen zich gelijkmatig door de atmosfeer verspreiden, profiteren alle landen van uitstootvermindering. Dit betekent ook dat landen niet van de baten van klimaatmaatregelen kunnen worden uitgesloten, hetgeen voor landen een prikkel kan zijn geen klimaatbeleid te voeren en, in plaats daarvan, mee te liften op het werk van andere landen (*free riding*). Uiteindelijk kan dit de algehele bereidheid tot mondiaal klimaatbeleid verminderen.

Het doel van klimaatonderhandelingen is daarom steeds geweest om internationale consensus te bereiken over klimaatpakketten. Volgens het voorzorgsprincipe van het UNFCCC zouden dergelijke pakketten moeten voorkomen dat een te hoge concentratie van broeikasgassen in de atmosfeer leidt tot aantasting van ecosystemen met bijbehorende humanitaire en natuurschade. Klimaatonderhandelingen sinds 1990 hebben laten zien dat het bereiken van een dergelijk pakket niet eenvoudig is en vaak meerjarige onderhandelingsprocessen vereist. In de eerste plaats laten onderhandelingen vaak een beweging zien van landen die voorgestelde maatregelen te duur vinden of als belemmering van hun economische groei zien. Ook is tijdens de onderhandelingen over het UNFCCC, het Kyoto-protocol, maar ook ten tijde van ‘Kopenhagen’ gebleken dat ontwikkelingslanden pas bereid blijken te praten over vermindering van hun broeikasgasuitstoot nadat industrielanden belangrijke stappen richting uitstootvermindering hebben gezet. Om toch richting een mondiaal gedragen verdrag te werken, bewegen onderhandelingen zich vervolgens richting een uitkomst waarbij voorgestelde maatregelen worden afgezwakt, waardoor ze voor meer landen acceptabel worden. Deze tussenoplossing kan voor andere landen echter weer te weinig ambitieus zijn, waardoor in het ‘eindspel’, vaak onder hoge tijdsdruk, geprobeerd wordt een oplossing te vinden waarover mondiale consensus kan bestaan.

Op basis van deze gegeneraliseerde beschrijving van onderhandelingen is in dit proefschrift de hypothese geformuleerd dat voor succesvolle onderhandelingen minimaal aan de volgende drie voorwaarden moet zijn voldaan:

1. Het geformuleerde klimaatbeleidspakket moet een juiste afspiegeling zijn van de posities van verschillende (groepen van) landen in het onderhandelingspel en in voldoende mate rekening houden met speltheoretische onderhandelingsprikkels.
2. Het proces van onderhandelingen moet voldoende flexibel zijn om verschillende posities en prikkels goed te kunnen overwegen en te verwerken in de onderhandelingsteksten. Hierbij kan het bijvoorbeeld wenselijk zijn om meerdere kleine stappen te nemen in plaats van enkele grote.
3. Tijdens het onderhandelingsproces moet een aantal keren van koers worden veranderd om aan de wensen van diverse landen tegemoet te komen. Voor het maken van deze tactische bewegingen kunnen de persoonlijkheid van een onderhandelingsleider, nieuw wetenschappelijk inzicht of andere tactische of faciliterende aspecten doorslaggevend zijn.

In dit proefschrift is voor een vijftal klimaatdossiers onderzocht of en in welke mate aan deze drie basisvoorwaarden is voldaan tijdens klimaatonderhandelingen.

Het eerste dossier betreft het onderhandelingsproces tussen 1990 en 2005 om te komen tot het UNFCCC (1992), gevolgd door overeenstemming over het Kyoto-protocol (1997) en de inwerkingtreding ervan in 2005. Het UNFCCC is een raamwerkverdrag met beginselen voor verdere uitwerking van internationaal klimaatbeleid. Het Kyoto-protocol was de eerste concrete uitwerking van het UNFCCC met verplichtingen voor industrielanden om hun uitstoot van broeikasgassen te verminderen, alsmede een pakket aan beleidsinstrumenten om aan de verplichtingen te kunnen voldoen. Tijdens de onderhandelingen over het UNFCCC en Kyoto-protocol beriepen ontwikkelingslanden zich op het principe dat landen weliswaar een gemeenschappelijke verantwoordelijkheid dragen voor klimaatbeleid, maar dat de invulling hiervan per land kan verschillen (*common but differentiated responsibilities*). Volgens ontwikkelingslanden betekende dit principe dat zij vooralsnog konden worden vrijgesteld van verplichtingen tot uitstootvermindering. Diverse industrielanden, aangevoerd door de VS, protesteerden hiertegen en wezen op de snelle toename van uitstoot van broeikasgassen door een aantal snel groeiende ontwikkelingslanden (met name China en India, maar ook, bijvoorbeeld, Zuid-Korea en Mexico).

Het compromis dat in Kyoto werd bereikt hield in dat alleen industrielanden kwantificeerbare verplichtingen op zich namen, maar dat men daarbij gebruik kon maken van het concept van verhandelbare emissierechten. Als gevolg hiervan konden industrielanden aan hun verplichtingen voldoen door te investeren in relatief goedkope projecten in ontwikkelingslanden (en in andere industrielanden) in plaats van in relatief dure binnenlandse maatregelen. Dit compromis vormde een doorbraak tijdens de onderhandelingen in Kyoto. Na 1997 bleek echter dat de gemaakte afspraken niet acceptabel waren voor het Amerikaanse Congres waarna President Bush in 2001 besloot het Kyoto-protocol niet verder te ondersteunen. Om het protocol vervolgens te redden, werden in vervolgonderhandelingen eerder gemaakte afspraken over, onder andere, het meetellen van bronnen van broeikasgasuitstoot en opties voor uitstootvermindering, alsmede hoe naleving van verplichtingen af te dwingen, opgerekt. Het resultaat hiervan was dat aan voorwaarde 1 in deze onderhandelingen niet volledig werd voldaan.

In termen van proces werden onderhandelingen over het UNFCCC en het Kyoto-protocol gekenmerkt door het nemen van een lange reeks kleine stappen, waarbij de jaarlijkse VN-klimaattop (COP), vanaf 1995, steeds wordt voorafgegaan door meer technische onderhandelingsronden. Hierdoor waren landen in staat om concrete voorstellen in te dienen, naast elkaar te leggen en uiteindelijk te proberen om syntheses van ingediende voorstellen te maken. Tijdens de onderhandelingsreeks rondom

UNFCCC en Kyoto-protocol werden deadlines vastgesteld, zoals de *Earth Summit* (1992) en de klimaattop van Kyoto (1997). Tegen de tijd dat deze deadlines naderden, werden onderhandelingen ook steeds politieker waardoor tactische aspecten steeds belangrijker, zo niet doorslaggevend werden. Ondanks dat aan voorwaarde 1 niet geheel werd voldaan, bleek de flexibiliteit van het onderhandelingsproces omtrent UNFCCC en Kyoto-protocol met de diverse kleine stappen vooruit een belangrijke faciliterende factor voor onderhandelingen.

Het bereiken van overeenkomst over het Kyoto-protocol in 1997 werd gefaciliteerd door een aantal belangrijke tactische factoren. In de eerste plaats stimuleerde de draai van de VS-delegatie een doorbraak tijdens de klimaattop in Kyoto. Voorafgaand aan de top kregen Amerikaanse onderhandelaars van het Congres (Byrd-Hagel resolutie) de instructie mee om geen uitstootvermindering te beloven zonder vergelijkbare inspanning van snelgroeiende ontwikkelingslanden. Interventie van Vice-President Al Gore in Kyoto zorgde dat de VS akkoord gingen met een verplichting tot uitstootvermindering in ruil voor mondiale toepassing van het concept van verhandelbare emissierechten. Ander tactische aspecten waren: de persoonlijkheid van onderhandelingsvoorzitter Raul Estrada; de in 1995 gepubliceerde aanwijzing (door het VN-panel van klimaatwetenschappers IPCC) van de invloed van menselijk handelen op het klimaat; en de doortastendheid van de EU na de Amerikaanse afwijzing van het Kyoto-protocol in 2001 om internationale steun voor het protocol te behouden. De laatste aspecten, waarmee aan basisvoorwaarde 3 werd voldaan, zorgden ervoor dat het Kyoto-protocol in 2005 in werking kon treden.

Het tweede bestudeerde onderhandelingsdossier betreft het beleidsinstrument *Joint Implementation* (JI). JI was opgenomen in het UNFCCC om samenwerking tussen landen mogelijk te maken waarbij een land een klimaatdoel behaalt door te investeren in een ander land, bijvoorbeeld omdat het daar goedkoper is (terwijl het voor het effect op het klimaat geen verschil maakt waar uitstootvermindering plaatsvindt). Als neveneffect zou JI ook overdracht van schone technologie kunnen stimuleren, bijvoorbeeld tussen industrie- en ontwikkelingslanden. Hierdoor was JI conceptueel geschikt voor opname in het Kyoto-protocol en kon aan voorwaarde 1 worden voldaan.

Rond 1995, tijdens de onderhandelingen over het Kyoto-protocol, werd JI echter onderdeel van een hoger politiek onderhandelingsspel, omdat met name ontwikkelingslanden vonden dat industrielanden eerst in eigen land moesten investeren in uitstootvermindering alvorens naar goedkopere investeringsopties over de landsgrenzen te zoeken. Daarnaast vreesden ontwikkelingslanden dat JI zou kunnen leiden tot investeringen in projecten die niet noodzakelijk zouden bijdragen aan de ontwikkelingsdoelstellingen van de gastlanden. Tijdens de klimaattop van Berlijn in 1995 werd JI daarom tijdelijk uit de onderhandelingen over het Kyoto-protocol gehaald en werd een proeffase voor JI gestart om te experimenteren met projecten en met methoden voor het berekenen van uitstootvermindering. Hierdoor ging de ontwikkeling van JI als concept in ‘de schaduw’ door om tijdens de hectische klimaattop van Kyoto in 1997 terug te keren als belangrijk middel om een compromis tussen industrie- en ontwikkelingslanden te bereiken over verplichtingen voor industrielanden. De flexibiliteit van het proces waarmee JI kon worden overgeheveld van politieke naar meer technische onderhandelingen en de gevolgde tactiek om het instrument in het protocol op te schalen naar mondiale toepassing was, gezien de stand van onderhandelingen kort voor Kyoto, boven verwachting. Dit maakt dat voor dit dossier aan voorwaarden 2 en 3 werd voldaan.

Als gevolg van de Kyoto-onderhandelingen werd JI opgesplitst in projectsamenwerking tussen industrie- en ontwikkelingslanden (*Clean Development Mechanism*, CDM) en tussen industrielanden onderling (verder JI genoemd). Het meer technische onderhandelingsproces over het vaststellen van operationele procedures voor JI en CDM is het onderwerp van het derde dossier in dit proefschrift. Deze onderhandelingen, die plaatsvonden tussen 1998 en 2008, richtten zich vooral op de vragen welke projecttypen voor JI en CDM in aanmerking kwamen (bijv. wel of geen bosbouwprojecten of kernenergie), hoe te beoordelen of met name CDM-projecten bijdragen aan duurzame ontwikkeling in de gastlanden, en hoe de behaalde uitstootvermindering te berekenen (accounting). Het Marrakech-akkoord van 2001 gaf antwoord op de meeste van deze vragen.

Het vraagstuk van accounting bleef echter ook na 'Marrakech' nog onderwerp van onderhandelingen, vooral omdat het Marrakech-akkoord op een aantal punten onduidelijk was en voor meerdere interpretaties vatbaar (waardoor niet volledig aan basisvoorwaarde 1 werd voldaan). Deze onduidelijk gold vooral voor het vooraf vaststellen of een JI- of CDM-project additioneel was aan wat een land of de investeerder al van plan was te doen zonder JI of CDM. De basisregel was dat alleen additionele projecten mochten meetellen in de 'Kyoto-boekhouding', maar onderhandelingen moesten een oplossing vinden voor het vaststellen van additionaliteit die enerzijds streng genoeg was om eerlijke uitstootrechten te behalen, maar anderzijds niet zo ingewikkeld en beperkend dat investeerders in JI- en CDM-projecten zouden worden ontmoedigd. Deze onderhandelingen vonden vooral plaats binnen de nieuw opgerichte uitvoeringsorganen voor JI en CDM (*JI Supervisory Committee* en *CDM Executive Board*).

In dit dossier werd aan basisvoorwaarde 1 (structuur) voldaan doordat de onderhandelingsuitkomst het mogelijk maakte dat het kosteneffectiviteitpotentieel van JI en CDM op mondiale schaal kon worden benut (met slechts de beperking dat kernenergieprojecten waren uitgesloten alsmede bosbeheerprojecten), met als uitzondering dat het Marrakech-akkoord op een aantal punten ten aanzien van accounting onduidelijk en tegenstrijdig was. Aan basisvoorwaarde 2 (proces) werd slechts gedeeltelijk voldaan. Enerzijds bleek het proces tot en met 2001 ('Marrakech') in staat om technische aspecten bij technische onderhandelingsorganen te houden en politieke onderwerpen op het niveau van de COP af te werken, anderzijds nam de *CDM Executive Board* na 2001 beslissingen over additionaliteit die politieke consequentie hadden (omdat deze beslissingen van invloed waren op de reikwijdte van met name het CDM), maar nauwelijks met de COP werden overlegd.

Aan voorwaarde 3 (juiste tactische manoeuvres) werd voldaan door na het terugtrekken van de VS in 2001 uit het Kyoto-proces meer flexibel te worden ten aanzien van JI- en CDM-procedures, waardoor deze voor meerdere industrielanden aantrekkelijker werden en het Kyoto-protocol daarom makkelijker te accepteren was. Tactisch minder handig was de strikte houding van met name de *CDM Executive Board* ten aanzien boekhoudregels voor vaststelling van uitstootvermindering, waardoor investeerders als de Nederlandse overheid en de Wereld Bank, die volgens het Kyoto-protocol al vanaf 2000 in CDM-projecten mochten investeren,[139] pas in 2005 duidelijkheid kregen over de toe te passen rekenmethodes.

Nadat het eerste dossier betrekking had op onderhandelingen op hoog politiek niveau (Kyoto-protocol met verplichtingen en beleidsinstrumenten), het tweede op het ontstaan van het beleidsinstrument JI,

[139] JI-projecten konden pas vanaf 2008 gecrediteerde uitstootvermindering opleveren.

het derde op de rijkwijdte van dit instrument, is in het vierde dossier van dit proefschrift aandacht besteed aan hoe rekenmethodes voor het vaststellen van uitstootvermindering door JI- en CDM-projecten kunnen worden gestandaardiseerd. Met behulp van gestandaardiseerde rekenmethodes kunnen projectkosten worden verlaagd en kan worden vermeden dat projectpartijen met eigen rekenmethodes de behaalde uitstootvermindering te hoog zouden vaststellen (teneinde meer emissierechten te verkopen). Als uitkomst van het onderhandelingsproces begon de *CDM Executive Board* na verloop van tijd rekenmethoden voor verschillende CDM-projecten per projectcategorieën samen te voegen tot gestandaardiseerde methoden die vrij toegankelijk waren voor andere projectinvesteerders. Hiermee werd aan basisvoorwaarde 1voldaan.

Voor wat betreft het onderhandelingsproces over standaard methoden kon aan basisvoorwaarde 2 worden voldaan doordat de *CDM Executive Board* en de *JI Supervisory Committee* meerdere keren per jaar bij elkaar kwamen/komen om methoden en toepassing ervan op projecten te beoordelen en te verbeteren. Daarbij worden ze ondersteund door gespecialiseerde panels. Vanuit tactisch oogpunt werden de onderhandelingen over gestandaardiseerde rekenmethodes in belangrijke mate gestimuleerd door: 1) onderzoekprojecten (zoals het EU-project PROBASE), 2) vroege investeerders in JI- en CDM-projecten zoals het *Prototype Carbon Fund* van de Wereld Bank en de Nederlands ERUPT- en CERUPT-tenderprogramma's, die reeds een eerste aanzet gaven tot standaard rekenmethodes, 3) het samenvoegen door de *CDM Executive Board* van individuele projectmethoden in gestandaardiseerde methoden (zoals hierboven beschreven), en 4) de toenemende vraag naar JI- en CDM-uitstootrechten vanuit het Europese Emissiehandelssysteem waardoor er ook meer vraag kwam naar methoden, inclusief gestandaardiseerde methoden. Deze aspecten droegen bij aan het voldoen aan basisvoorwaarde 3 in deze onderhandelingen.

Het laatste dossier in dit proefschrift betreft het lopende onderhandelingstraject dat moet leiden tot een nieuw internationaal klimaatverdrag dat moet ingaan vanaf 2020. Het dossier beschrijft hoe onderhandelingen over een nieuw 'post-Kyoto' pakket met kwantitatieve verplichtingen tot uitstootvermindering voor industrie- en snelgroeiende ontwikkelingslanden mislukten tijdens de onderhandelingsperiode 2005-2009 en hoe onderhandelingen zich vervolgens toelegden op vrijwillige uitstootbeperkingen door landen. Het dossier laat ook zien, op basis van berekeningen door het project *UNEP Emissions Gap*, dat de aangekondigde vrijwillige maatregelen waarschijnlijk niet toereikend zijn om de gemiddelde temperatuurstijging op aarde te beperken tot 2^{o}C (dit doel is gebaseerd op IPCC-rapporten en politiek vastgelegd in de *Cancun Agreements*).

Om te voldoen aan basisvoorwaarde 1, is in dit dossier betoogd dat de actieve deelname van met name ontwikkelingslanden aan een internationaal klimaatbeleid kan worden bevorderd door nationale klimaatmaatregelen te integreren in nationaal beleid voor (duurzame) economische, sociale en milieuontwikkeling. Hierdoor worden landen gestimuleerd om een visie te formuleren waarin ontwikkelingsdoelstellingen worden behaald met een lage(re) uitstoot van broeikasgassen. Het dossier illustreert een dergelijke aanpak aan de hand van de ervaringen binnen het UNFCCC met *Technology Needs Assessment* (TNA); dit is een programma dat ontwikkelingslanden ondersteunt bij het kiezen van schone technologieën die ook passen binnen binnenlandse ontwikkelingsplannen.

Ter ondersteuning van de implementatie van aldus geïdentificeerde klimaatmaatregelen per land, zou via internationale klimaatsamenwerking financiële, technische en capaciteitsondersteuning kunnen worden georganiseerd. Hierdoor kunnen prikkels ontstaan voor met name ontwikkelingslanden om

meer maatregelen voor vermindering van broeikasgasuitstoot te nemen dan ze zich onder normale omstandigheden hadden kunnen veroorloven. Met andere woorden, door bestaande ontwikkelingsdoelen klimaatvriendelijk in te vullen, kan via internationaal klimaatbeleid meer geld, technologie en capaciteitsondersteuning beschikbaar komen dan anders het geval zou zijn geweest.

Om te controleren of de aldus gestimuleerde individuele inspanningen van landen tezamen voldoende zijn om aan de 2^{o}C-doelstelling te voldoen, zou het onderhandelingsproces periodiek de beoogde en gerealiseerde acties moeten vergelijken met benodigde inspanningen. De gebruikte methode van het jaarlijkse rapport *UNEP Emissions Gap* kan daarbij als voorbeeld dienen.

In termen van het proces van onderhandelingen over een toekomstig klimaatverdrag wordt aanbevolen dat bestaande methoden voor het integreren van klimaatmaatregelen (bijv. technologieën) in nationale ontwikkelingsplannen, zoals TNA, *nationally appropriate mitigation actions* (NAMA) en *national adaptation plans* (NAP), zoveel mogelijk op elkaar worden afgestemd zodat een geharmoniseerd proces ontstaat dat (ontwikkelings)landen efficiënt en effectief kunnen toepassen. Hierdoor kunnen overlappingen worden vermeden, maar kan ook worden voorkomen dat andere aspecten van klimaat- en ontwikkelingsplanning over het hoofd worden zien. In de toepassing van een dergelijk geharmoniseerd proces en in de implementatie van de geïdentificeerde acties voor klimaat en ontwikkeling is, in dit proefschrift, een belangrijke rol voorzien voor, onder andere, multilaterale ontwikkelingsbanken en UNFCCC-organen zoals het Technologiemechanisme, het Adaptatiefonds en het Groene klimaatfonds.

Het mislukken van de klimaattop van Kopenhagen in 2009 over een voortzetting van het Kyoto-protocol met kwantitatieve verplichtingen per land is een belangrijke tactische factor geweest voor het veranderen van de onderhandelingskoers richting het sterker integreren van klimaatmaatregelen in ontwikkelingsdoelstellingen van met name ontwikkelingslanden. Aan basisvoorwaarde 3 kan verder worden voldaan door de ervaringen met meer dan 8000 CDM projecten, meer dan 120 TNAs en diverse ervaringen met NAMAs en NAPs in ontwikkelingslanden mee te nemen in de onderhandelingen over een toekomstig klimaatverdrag. Deze processen hebben bijgedragen aan het opbouwen van vertrouwen dat het kiezen van klimaatmaatregelen, mits goed georganiseerd met betrokkenheid van juiste ministeries, goed samen kan gaan met ontwikkelingsplanning.