

**Post-graduation strategies for
students from developing countries:
exploring four developed countries in
terms of brain drain/brain gain and
brain circulation**

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Abstract

This paper explores countries' post-graduation policies and strategies for students from developing countries. A snapshot of four European countries (Germany, Norway, the Netherlands and the United Kingdom) is taken in 2010. They are examined with respect to specific instruments and overall policy packages encouraging a retention or return of students from developing countries. A qualitative design was used to thoroughly analyse these national policies and practices. The paper thereby addresses a specific aspect of highly skilled migration: the mobility of international students. Industrialised countries are interested in international students as they are perceived as 'designer immigrants'. Therefore they liberalise their policies intending to attract and retain international students. Among this group, especially students from developing countries are of interest. The study assesses the effects of these national policies on the position of developing countries (sending countries) in terms of brain drain, brain gain and brain circulation. The analysis shows that the receiving countries under study have no coherent post-graduation policies for students from developing countries in place leading to risks of brain drain for developing countries.

I Introduction

In recent years, many European universities saw their number of foreign students increase. European exchanges programs contributed to this on the one hand, yet on the other hand many foreign students moved abroad to pursue a degree. This international student mobility is not just a European phenomenon but a worldwide trend, which has tremendously increased over the years: whereas in 1975 0.6 million students were mobile, data from 2007 reports 2.8 million mobile students (2009a; UNESCO & UIS, 2009) and forecasts expect the number to increase by 2025 up to ca. 8 million (Altbach & Bassett, 2004; OECD, 2009b).

This growing student mobility is considered to be a response to/result of a globalizing world: better and cheaper communication and transport possibilities, global interconnectedness and an increase in the demand for an international labour market, stimulate the movement across borders (Suter & Jandl, 2008; Tremblay, 2008; Vincent-Lancrin, 2008). Other explanations encompass the increasing use of English as a language in higher education and the grown awareness of the advantages students gain when being in another country (Vlk, 2006). Particularly the increase of English as a language of instruction seems beneficial for the 'skyrocketing' of the number of international students (The Hindu, 2009).

At the same time, many western countries are facing challenges of an ageing population and quests for being competitive, resulting in a global competition for talent. Governments adopt policies to attract highly skilled manpower – 'the best and the brightest'- and to compensate domestic shortcomings (Canton, 2001; Chiswick, 2005; European Commission, 2006; OECD, 2009b; Vlk, 2006).

It is not surprising that the last years mirrored a liberalisation of admission policies in favour of highly qualified people (OECD, 2002; Tremblay, 2008). The international mobility of students is thereby considered to be an important subset of highly skilled migration: and universities play an important role in the provision of highly skilled immigrant labour. University studies are more and more seen as "stepping-stones to immigration" (Goldin, Reinert, & Beath, 2007; Suter & Jandl, 2008) and students are perceived as 'designer immigrants'¹: they are integrated into society and have a background of the country; thus create an international labour market (OECD, 2001; Suter & Jandl, 2008).

The international mobility of students is considered to be advantageous for students and western countries. Countries nowadays see benefits to retain students in the country for a longer time after graduation. There is, however, another side to the story. If a host country allows international students to stay in the country after their studies, there is a chance that students will not return to their home country. If this occurs the outcome of the student mobility process can be regarded as a case of brain gain for a host country and a brain drain for the sending country.

In order to get a better picture about the consequences of international student mobility (on sending/receiving countries), case study research in four countries is conducted. Thereby the **flow of student mobility from South to North, from the developing to the developed countries**, is considered. This flow is expected to be continuously increasing (Altbach, 2004; Altbach & Bassett, 2004;

¹ Countries "are importing raw material to train some of the human capital the need [...]. In effect, the developed country is generating 'designer immigrants'" (Skeldon, 2005, p. 17)

Goldin, et al., 2007; Kapur & McHale, 2005). Developing countries are thereby sending countries and developed countries are host countries. It is the legal/political settings in the host country (developed) and their effect on the sending (developing²) which will be examined in this study.

Effects of this mobility

To begin with, it is beneficial to have a more detailed look at the literature regarding the effects of student mobility (as a subset of highly skilled mobility) on sending and receiving countries.

One stream of literature claims that for **developed countries**, an influx of students is beneficial and a brain gain takes place: contributions are made to their own economic situation in terms of overcoming an ageing population and fostering research capacity and innovation, being an engine of growth (Chiswick, 2005; OECD, 2009b; Vlk, 2006). Students from developing countries are seen as an instrument for providing development aid and capacity building (OECD, 2009b). Other scholars claim this student flow is balanced for the **developing world** as well, as it helps to overcome domestic shortages and yields potential for gathering new knowledge. In addition education facilities are offered which do not exist in these countries in the first place (D'Costa, 2006; Wickramasekara, 2002). Opposed to that, are downsides to this phenomenon. Concern is raised about a possible **negative impact this has on sending countries**, a brain drain:

- “countries at the end of the chain [...] see their small elite of educated children go

² Developing countries, are low income and lower middle income countries, according to the Atlas method of the World Bank classification (for a full list see appendix) (The World Bank, 2009)

away and never return” (de Wit, 2010, p. 14).

- “the migration of qualified workers boils down to an indirect transfer of prosperity from the Third World to the First World” and is hence not in line with what is known as development cooperation (Körner, 1998, p. 28).
- “the emigration of skilled workers is usually blamed for depriving developing countries of one of their scarcest sources, human capital” (Docquier, 2006, p. 2).

Whether this student mobility is beneficial or harmful depends on various elements. An important factor regards the question: *what happens after graduation?* Do students leave the country or remain in their host country? This is next to individual preferences linked to the legal/political settings of the sending and receiving country. Still, the literature does not provide an immediate answer, as often data on return – rates does not exist (Skeldon, 2005).

Some claim that students from developing countries tend to return, as they feel strongly connected homeward and aim to apply the knowledge they received (Gwynne, 1999; Saxenian, 2002). Others argue that this is not always the case. Although no coherent data sets are available, university study is seen as a new channel for migration, attracting further migration (Baruch, Budhwar, & Khatri, 2007; Cervantes & Guellec, 2002; Dreher & Poutvaara, 2005; Goldin, et al., 2007; Gribble, 2008; Tremblay, 2005):

“university study has emerged as a major avenue by which young people from developing countries can obtain the right to work and permanently reside in developed countries” (Goldin, et al., 2007, p. 167).

II Research focus

In consideration of the growing student mobility from developing to developed countries, and the lack of data on return rates, the overall research interest of this study questions the legal/political settings in the host (developed) country and examines how they may consciously or unconsciously affect sending countries (developing countries):

What are the strategies that governments of developed countries pursue for students from developing countries in terms of post-graduation and how can the situation be understood through the lenses of brain drain, brain gain and brain circulation?

This research thereby investigates four countries and sheds light on the post-graduation stage by offering a nuanced picture of policies adopted to steer the retention or return of individuals. It explores whether the legal/political settings of host countries might lead to risks of brain drain, brain gain for developing countries and/or to brain circulation: *“the conditions under which a country is gaining or losing are not a matter of fate; to a large extent, they depend on the public policies adopted in the receiving and sending countries”*(Docquier & Rapaport, 2011, p. 51).

The research question is answered with the help of qualitative data collected in Germany, Norway, the Netherlands and the United Kingdom. Different data is collected and analysed. A first set of data consists of legal and policy documents. This is supplemented and amended by consulting those national agencies supporting mobility and promoting internationalisation. Second, semi-structured interviews were held and email correspondences took place³. Interview partners were spokespersons from different

³ For an overview of data sources see appendix.

ministries as the post-graduation strategies are not limited to education policies alone but also relate to other policy areas: development policy, migration policy and economic aspects.

The paper is structured as follows: the next section discusses previous research and main findings of policies directed towards highly skilled migration. In turn the concepts of brain drain, brain gain and brain circulation are depicted, followed by an comparative overview of the empirical data and a discussion.

III Mobility policies and strategies

As the literature does not specifically address public policies a receiving (developed) country can adopt for international student mobility from developing countries⁴, it is drawn on wider approaches towards highly skilled migration, disclosing the following options:⁵:

- migration management
- diaspora option (Lowell, et al., 2004)

‘Migration management’ places emphasis on a coherent management of policies. The focus is in particular on the *temporary* character of migration rather than the *permanent*. The authors (Lowell, et al., 2004) suggest to design admission policies in line with a country’s *domestic demand* and to implement incentives encouraging *return migration* (Lowell & Findlay, 2002). A similar argument is made by Kapur & McHale (2005) who try to provide

⁴ The literature addresses more frequently the policy options for sending countries than for receiving countries (Gribble, 2008; Kapur & McHale, 2005; Lowell, Findlay, & Stewart, 2004).

⁵ Note: although a government’s policies can steer and control migration to some extent, it is still up to individuals to decide what do to upon post-graduation.

policy responses to skilled migration without further liberalising the systems (particularly directed towards mobility from developing countries). They state that policies in terms of 'connection' are favourable, facilitating circulatory migration and temporary stays.

The Diaspora option is linked to compensation/return: the transfer of knowledge and technology back to the developing countries, stimulated through networks. These networks (might) evolve automatically and are not restricted to national and organisational barriers. They are not in need of an infrastructure: once individuals leave their home country economic and professional ties might come into being and result into a frequent exchange and a well-connected community (Nuffic, 2004). In addition the connections individuals have with their home country are strengthened.

Knowledge transfers and interactions are enabled, being an important element in an increasingly interconnected marketplace. These transfers *"can boost productivity, provide resources for development, stimulate education and business, develop two-way trade, and create more stable long-term partners"* (Lowell, et al., 2004, p. 23). Sending countries strongly perceive the benefits of organising their Diasporas and also receiving countries have an interest in this two-way trade. It is advised that both countries should place emphasis on organising these networks: *"once diasporas are seen as agents for change, host countries can seek out a nation's expatriates as facilitators of projects for international assistance"* (Lowell, et al., 2004, p. 25).

Another option connected to the Diaspora issue is the flow of financial means (remittances⁶). It is considered to be a tool for

overcoming poverty being, however, mostly in the hands of individuals. Governments can facilitate the *flow of remittances*. Still, the flow of remittances results into economic losses for host countries. This is why governments try to regulate and partly restrict this flow.

Temporary migration programmes are identified as being suitable for the movement of students from developing to developed countries and a return of highly skilled people shall be facilitated (Kapur & McHale, 2005; Lowell, et al., 2004; Tremblay, 2005). A positive view is taken towards the flow of remittances, the benefits from Diaspora options, the inflow of knowledge and technology and the economic benefits for the workers involved and the country (Carr, Inkson, & Thorn, 2005a; Lowell & Findlay, 2002; Lowell, et al., 2004). Yet another side to the coin is: *"there is nothing more permanent than a temporary migrant"* (Crisp, 2007, p. 24).

In a nutshell the managing of the temporal dimension highlighted as important (temporary versus long-term stays). Post-graduation options disclose a return of students to their country of origin/ a country of their choice or a retention in the hosting country. Pathways hereby are temporary work permits upon graduation, or long-term and permanent residence permits upon graduation (Tremblay, 2005). In addition, the creation of networks and the fostering of the return of migrants is stressed. An overview of the instruments a country can adopt is presented in table 1.

⁶ Remittances: money transfer to families in the home country.

IV Brain Drain, Brain Gain, Brain Circulation

The concepts of brain drain, brain gain and (brain circulation) are widely accepted among scholars when studying the effects of the mobility of the highly skilled. In the past, these concepts were typically used to describe the movement of highly skilled personnel (Skeldon, 2005), these days they are also used to assess the mobility of students.

Brain Drain

The brain drain concept is associated with the emigration of professionals/highly skilled people, and often with the mobility from developing to developed countries (Hansen, 2003; Lien & Wang, 2003; Lowell & Findlay, 2002; Lowell, et al., 2004). This movement of professionals/ highly skilled people takes

Table 1 Policy Approaches a Host Country can adopt

Policy Approach		Indicators/ Instruments	Return to home country
Management	Temporary Retention:	<ul style="list-style-type: none"> • Possibility to change status/reason for entering country in the first place • Prolong stay • Transition period between graduation and leaving the country • Option for continuing education (PhD, second master) • Option to look for a job in a certain timeframe 	Likely
	Long-Term Retention	<ul style="list-style-type: none"> • Obtain long term work permit • Obtain permanent residence permit 	Unlikely
	Return	<ul style="list-style-type: none"> • Purpose related residence permit not renewable and cannot be changed • Establish Reintegration programs • Barrier to re-enter country for a certain timeframe 	Likely
Diaspora	Facilitation Networks/ Return	<ul style="list-style-type: none"> • Stimulate creation of networks • Make sure that students remain ties to home country (temporary stays) • Enable flow of remittances 	Likely

place on a long term or permanent basis, not compensated, resulting in a loss of human capital:

“A brain drain can occur if emigration of tertiary educated persons for permanent or long stays abroad reaches significant levels and is not offset by the “feedback” effects of remittances, technology transfer, investments, or trade. Brain drain reduces economic growth through loss return on investment in education and depletion of the source country’s human capital assets” (Lowell & Findlay, 2002, p. 7).

The effects of this mobility are particularly bad for developing countries, as human capital is a crucial condition for a country’s development and the reduction and eradication of poverty (Skeldon, 2005). Putting it in the words of Todaro (1985) as cited in Saxenian (2005): *“the people who migrate legally from poorer to richer lands are the very ones that Third World countries can least afford to lose, the highly educated and skilled”*.

Sending countries are thus harmed by highly skilled migration, as the brightest manpower leaves the country. Receiving countries in turn are considered to benefit from this (Adnett, 2010; Chiswick, 2005). It is also feared that once people leave their home country it is not likely that they return (Baruch, et al., 2007; Cervantes & Guellec, 2002). This is due to limited opportunities exist in terms of research funding, career options, intellectual input, education for children and political circumstances as well as the range of opportunities existing in the host country (Dodani & LaPorte, 2005, p. 489).

Risks of a brain drain situation can thus occur in two forms:

- for **developing countries** if people move from developing to developed countries and stay there on a long-term basis (also in relation to education).
- for **developed countries**: people educated in the country return to home country or another country (no direct return of a developed country's investment in education is received)

Brain Gain

Brain gain is often considered to be the equivalent of brain drain; still hardly in itself approached as a concept. According to Jalowiecki & Gorzelak (2004), the concept gained attention in the 1990s and is used to describe policies designed to attract scientists to a country. Brain gain refers to an influx of highly skilled people through immigration (Carr, Inkson, & Thorn, 2005b, p. 387). Thus the host country was not involved in financing the education but benefits. The attraction of what Skeldon terms raw material (young talent) to form designer immigrants is considered to be a brain gain as well (2005, p.

17). On the other side, a developing country sending its students abroad and making them return afterwards also faces a brain gain situation (understood as reverse migration) as students bring new knowledge to the country (Carr, et al., 2005b, p. 388). Sometimes it is even part of a wider 'economic development strategy' to send domestic students abroad and benefit from the reverse migration (Cervantes & Guellec, 2002, p. 2; OECD, 2004).

A brain gain situation can thus occur

- **for developing countries** if people who moved abroad and come back educated (reverse migration)
- **for developed countries** if people are attracted according to domestic needs and work at a highly skilled level; also the attraction of PhD students as a contribution to the growth of knowledge.

The traditional concepts of brain drain and brain gain associate the mobility of the highly skilled people with a loss for the sending country and a gain for the receiving country - a zero-sum game⁷ (Cervantes & Guellec, 2002; Körner, 1998). Still the concept is challenged, as some studies no empirical justification for negative consequences of brain drain and claim that myths are circulating (Beine, Docquier, & Rapaport, 2008; Gibson & McKenzie, 2011). A number of studies also suggests that this migration might bring benefits for both sending and receiving countries. It can even be stimulating and might create huge networks (D'Costa, 2006; Haupt, Krieger, & Lange, 2010; Wickramasekara, 2002)⁸.

⁷ A zero-sum game is conceptualised in a way that if one party wins it goes at the expense of the other party.

⁸ For a detailed analysis see Wickramasekara (2002).

Table 2 Brain Drain/Brain Gain

Balance	Perspective taken	Indicators
Brain Gain	Home Country	<ul style="list-style-type: none"> • Students go abroad, return with knowledge; • Home country did not/little educate student
	Host Country	<ul style="list-style-type: none"> • Inflow of skills according to certain needs • Students stay in country for a longer period: • pursue continuous education, (PhD , do innovative research), • PhD students entering the country • participate in the labour market
Brain Drain	Home Country	<ul style="list-style-type: none"> • Students go abroad • No return for a long time • No feedback effects (remittances/network creation)
	Host Country	<ul style="list-style-type: none"> • Educated students do not participate in the labour market • Students leave the country /move to another country /return to home country

Brain Circulation

Another stream of literature conceptualises the international mobility as global talent flow and circular migration (Carr, et al., 2005b; Vertovec, 2007), skill flow (Clemens, 2009) or brain circulation (Lowell & Findlay, 2002; Saxenian, 2005). The concept emerged in the last years as a response to a diminishing of borders and times where people lose their feeling of national identity and statehood. Saxenian provides a milestone to the theoretical exploration of brain circulation by illustrating the Silicon Valley experience in the

USA. Emphasis is placed on the role of transnational communities (Saxenian, 2005).

Saxenian demonstrates the concepts on the experience of Silicon Valley (2006): people move abroad to get a foreign education, stay there for a certain period and set up businesses. This stage is perceived as a **brain drain** for the sending country at that point. Later on, people return to their home countries and cooperate with governmental officials, spread their knowledge and invest in universities and training. Eventually new firms and enterprises might be set up, contributing to a competitive environment with new networks, ties and options for expansion. What previously have been remittances are nowadays transnational communities who *“foster economic development directly, by creating new jobs and wealth, as well as indirectly, by coordinating the information flows and providing the linguistic and cultural know-how that promote trade and investment in their home countries”* (Saxenian, 2002).

The brain circulation approach extends the assumptions of brain drain and brain gain as:

- the process is interactive, flexible, return migration can occur
- a brain drain is perceived at first
- migration might involve different countries over time (difficult to identify sending/receiving country)
- it takes a more longitudinal approach and benefits are set off after time, approaching a mutual benefit situation

The positive effects of brain circulation take time to pay off, and are long-term wise oriented. In a nutshell, the concept of the

“lively return migration of the native born, or “brain circulation”, re-supplies the highly educated population in the sending country and, to the

degree that returned migrants are more productive, boosts source country productivity” (Lowell & Findlay, 2002, pp. 7-8).

Highly skilled workers once sent out, set up links with their home countries, resulting in an interconnectedness with other countries in forms of well-connected diasporas (Nuffic, 2004). In addition it contributes to issues of ‘economic development, labour shortages, public opinion and illegal migration’ (Vertovec, 2007, p. 7).

Table 3 Brain Circulation

Perspective taken	Indicators
Home Country	<ul style="list-style-type: none"> Students create networks with home country – Diaspora Option Send remittances and knowledge back
Host Country	<ul style="list-style-type: none"> Governments facilitate the establishing of networks Ambassador function Create options/incentives for return

V Cross-country comparison

Based on the previous section, legal/political instruments to stimulate individual’s choices upon graduation are derived. Subsequently the effect on sending countries is identified (as understood in terms of brain drain, brain gain and brain circulation) given that the instrument is adopted. Hereby the temporal dimension is decisive. In turn it shall be explored whether national policies facilitate consciously or unconsciously an imbalance⁹.

⁹ For this research, the economic weightings (whether a surplus is reached or a deficit is approached), are not considered. Instead national policies and instruments governments made

The empirical data of the four countries for these instruments will be discussed in more detail in the following.

Table 4 Instruments available to receiving countries and effect on sending country if the instrument is adopted.

Instrument adopted by host country	Effect on sending country if instrument is adopted	
1	Expectation to leave country after purpose is reached	Brain Gain
2	Option for continuous education (Master/PhD)	Brain Drain (longer if a PhD is done)
3	Prolong stay	Brain Drain (short term)
4	Option to look for a job after graduation	Brain Drain
5	Possibility to change status/reason for entering country in the first place	Brain Drain
6	Receive long term work permit	Brain Drain
7	Possibility to obtain permanent residence permit	Brain Drain (long term)
8	Purpose related residence permit which cannot be renewed	Brain Gain
9	Reintegration / Return Programmes	Brain Gain/ Brain circulation

available and designed for students from developing countries shall be identified.

Instrument adopted by host country		Effect on sending country if instrument is adopted
10	Financial Incentives for return	Brain Gain/ Brain Circulation
11	Restrict Entry to country within a certain timeframe	Brain Circulation
12	Allow for improving flow of remittances	Brain Circulation
13	Facilitate Creation of Networks	Brain Circulation

1 Entrance criteria & perception on students from developing countries

To start with, all four countries have a strong interest in including international students in their higher education system. Reasons for this range from contributions to the international character of higher education and society, to improvements of the quality of domestic education to wider economic reasons (i.e.: solution to ageing society). However, none of the countries focuses actively on the attraction of students from developing countries within this broader group of international students. A number of special scholarship programmes for students from developing countries are in place -capacity building instruments.

As for the entrance criteria, the countries ask similar conditions from its international students: i.e. being accepted at a higher education institution and possessing financial means to cover the stay. In the United Kingdom a point-based migration system is in place, defining entry routes depending on qualification and purpose. Students in this case need to apply for a student visa under tier 4

and need to possess 40 points¹⁰. Differences are observed with regard to the temporal dimension of the entrance. Norway (UDI, 2010b, 2010d), the United Kingdom (Home Office UK Border Agency, 2008) and the Netherlands (Immigratie - en Naturalisatiedienst, 2010; IvhO, 2008) place emphasis on the temporary nature of the education-related stay. The expectation is that students have to leave the country after obtaining their degree. In Germany a similar condition was formerly in place, being however removed with legislation coming into force in the last years (DAAD, 2007a) .

2 & 3 Option for continuous education (Master/PhD) & prolong stay

All countries allow in general for doing a continuous education in form of a master study or a PhD. Time restrictions are in place for an education related stay in Germany and the Netherlands. For Germany, 'Aufenthaltsgesetz' §16 specifies the maximum period for doing an education up to the Master as 10 years. For a PhD this is 15 years. It not allowed to follow a second study (Bundesregierung, 2004; Bundesverband Auslaendischer Studierender, 2008). Furthermore, for students from developing countries (entering on a scholarship) a prolonging of the stay depends on the situation of the home country: it is checked whether political or other reasons speak against extending the applicant's residence permit (DAAD, 2007a; Eurydice Unit Germany, 2010). The Netherlands allow for the normative study duration and two additional

¹⁰ 30 points for being accepted for study purposes at an education provider ('sponsor') and another 10 points are obtained if it is granted that students have enough money as to cover their study and living expenses (Home Office UK Border Agency, 2010b).

years. If students intend to do a Master as well, the time counter is set back (Nuffic, 2010). In the United Kingdom, the 40 points requirement has to be met again when following a continuous education (Graduate Prospects, 2010). PhDs are in Norway (Circular 2010-101) and in the Netherlands not considered as students anymore, instead they fall into the work/research category (UDI, 2010b).

4 Option to look for a job after graduation

All countries have a policy in place, allowing graduates to look for a job after graduation. Within a certain timeframe they may stay in the country to find a job according to their qualification. The timeframes differ, however: Norway has a rather short period of six months in comparison to the Netherlands and Germany, allowing for a one year stay (DAAD, 2007b). The United Kingdom enables nowadays for the longest period, being two years. Until 2006 the frame was also 12 months and it was difficult to enter the 'work tier' (Home Office UK Border Agency, 2006). This current job-seeking period shall be used as a bridge between the tiers: students have the chance to meet the eligibility criteria for entering another tier (preferably the highly skilled one). Even stronger it is expected that students applying for this category move to another tier of the points based system (Home Office UK Border Agency, 2010a).

The Netherlands have next to the '*Seeking work after Graduation*' a special package in place: '*Admission scheme for highly qualified persons*'. The first scheme requires an immediate application for the job-seeking permit upon graduation. The admission scheme instead, allows applying within 3 years after graduation for the job-seeking status. This grants graduates more flexibility.

Reasons for implementing options to stay in the country are clear: societies are in need of highly skilled migrations. Particularly Norway and the Netherlands stressed that if they do not offer options for these international students to stay, the students might go to those OECD countries having a more liberalised migration system. This is not regarded as beneficial for the investments made into foreign students.

5 Possibility to change status/reason for entering the county in the first place

All countries under study allow for a change of status/reason for entering the country in the first place. To be more explicit, students who entered with a permit being linked to the purpose of obtaining an education can apply for a change of permit (i.e.: work permit, or transition period to search for a job). It is mentioned though, that in Norway this was until 2001 not possible (Thorud, Haagenen, & Jolstad, 2009). The Netherlands reflected changes with regard to this, as a result of the reform in 2007 as well.

6 & 7 Receive long term work permit & permanent residence¹¹

In none of the countries, it is possible to receive a long term permit granting free access to the labour market immediately; probably because the stays of students are considered to be temporary in the first place and are linked to study purposes. In Germany after two years of legal employment, students can freely access the labour market. In case of the Netherlands, this is set to five years. For the other two countries, it could not be obtained when and if a long term work permit is granted.

¹¹ Note that a number of criteria need to be fulfilled before obtaining a permanent residence permit. They are, however, not important to consider here.

All countries under study have options for permanent settlement, being applicable for students from developing countries as well. A special situation exists in Norway: a rather short period of only three years of legal residence is in place, next do a decent knowledge of Norwegian ((UDI, 2010a, 2010c). Germany has a period of five years in place, whereas half of the study time is credited in this (Bundesregierung, 2004; DAAD, 2007b). The Netherlands and the United Kingdom have a period of five years as well. Yet in the United Kingdom students being in tier 4 do not qualify to apply for permanent settlement (UK Border Agency, 2010).

Linking these conditions to the job-seeking period Norway reflects a rather small time span for job seeking and a rather short one for permanent settlement as well. It seems that those students who take the effort and have success in finding a job, are rewarded for this later on. Germany and the Netherlands request a legal stay of a period of five years in connection to offering a job-seeking period of 12 months. The United Kingdom also requests a period of five years of residence. Yet, it offers students to look for a job in a timeframe of two years, creating good chances to enter the labour market and stay on.

8 Purpose related residence permit, not renewable

Although in the previous section it has been claimed that this kind of permit is not in place, it needs to be formulated in a different way: all countries allow for renewable permits. However once students make use of the job-seeking period the permit issued for doing so cannot be renewed and students have to leave the country, if no adequate job is found within that time frame.

9, 10 & 11 Reintegration/Return programmes & financial incentives for return & restriction of re-entry

The countries under study have not been tremendously concerned with issues of 'return'. Germany and Norway (VARP programme) have programmes in place, supporting a return. These programmes are however only applicable if students do not have legal grounds for residence anymore or aim to return voluntarily. Hence, they are can barely been seen as encouragements to return. As for the Netherlands and the United Kingdom no similar programmes could be identified.

The countries (except Norway) do not adopt active 'return' strategies. It is claimed that they try not to interfere in the decision of individuals. In addition it has been stressed that that an active 'return' policy for students from developing countries would not be efficient, because it cannot be controlled in an effective way that students go to their home country. The Dutch case reveals that a 'return' policy would not be in line with their values.

Former Norwegian policies were marked by strong restrictions after graduation¹² and are still partly the case. A special condition is connected to the national scholarship: the 'Quota scheme'. It is designed for students from developing countries and intended to create capacity. It prescribes that the loan needs to be paid back: if individuals do not leave Norway after graduation, turn to another country or try to re-enter within a timeframe of ten years. This is as well checked by the Norwegian Directorate of Immigration (UDI).

¹²For instance 'Quarantine': before 2001 students had to leave the country for five years before being allowed again to enter as a qualified worker.

12 & 13 Allow for improving flow of remittances & facilitation of network creation

Except for Norway, no evidence could be gathered that countries are actively trying to improve the flow of remittances. However, all countries stressed the importance of the facilitation of networks, either in form of Alumni networks or among researchers. Still little actions for doing so could be seen.

Comparing the Policy Packages on Retention & Return

The data reveals that on the one hand quite a number of instruments/policies are adopted allowing for a stay of students upon graduation. It is emphasised that the instruments are designed for international students in general, not for students from developing countries in particular. Still these options are also available for students from developing countries and it is barely differentiated. In general, the economic potential students yield is recognized, and governments are in favour that students stay after graduation. Still, their stay is not actively accelerated. Instead the legal framework is provided and students decide individually whether they would like to stay or not.

The empirical data indicates that all countries look back on changes in the legal system over the last ten years, resulting in better options for foreign graduates to stay on. Hence this liberalisation of policies, as mentioned in the literature (Chiswick, 2005; OECD, 2002; Tremblay, 2005) is confirmed for the countries under study.

On the other hand governments are aware of the benefits of circular migration and perceived this as a favourable option regarding international student mobility. Still there were hardly incentives in place at the national level to contribute to this, i.e.: support

the creation of networks. In addition only a few instruments were implemented, stimulating a return of students. Governments perceive it as difficult to control that students return indeed to their home country (rather than another country) and apply the knowledge there. This is seen as the reason why hardly coherent policies are in place ensuring that students return.

In terms of scholarships, different conditions prevail. Norway is strongly ensuring that students entering on a scholarship, also return home after completion of their studies (checked by UDI). Germany also considers the renewal of residence permits on basis of the sending country's situation. The Netherlands reflect a mismatch with regard to this: the IND (Integratie- en Naturalisatiedienst) does not possess enough information as to know when students are expected to return (on grounds of scholarship agreements). This policy inconsistency might lead to unintended consequences. An overview of the results can be found in Table 5.

Table 5 Overview Instruments adopted

Instruments	Results Norway	Results Germany	Results the United Kingdom	Results the Netherlands
Expectation to leave country after purpose is reached	In place	Not in place	In place	In place
Option for continuous education (Master/PhD)	Yes, though PhD does not fall into the study category	Yes	Yes	Yes, though PhD does not fall into the study category
Option to look for a job after graduation	Yes, six month job seeking period	Yes, one year job seeking period	Yes, two years job seeking period	Yes, one year job seeking period
Possibility to change status/reason for entering country in the first place	Yes	Yes	Yes	Yes, but in need of notification
Prolong stay	Yes	Yes: up to 10 years for Master studies, 15 years PhD (not issued)	Yes	Yes. Study duration plus two additional years
Receive long term work permit	Not immediately	Not immediately, after two years	Not immediately	Not immediately, after three years
Possibility to obtain permanent residence permit	Yes, after a period of 3 years	Yes, after 5 years. Half of the study time is credited	Yes, after 5 years of legal residence	Yes, after 5 years of legal residence
Purpose related residence permit which cannot be renewed	Not in place	Not in place	Not in place	Not in place
Reintegration / Return Programmes	Yes	Yes, for voluntary return	Not in place	Not in place
Financial Incentives for return	Yes, negative incentives. Pay back loan.	Not in place	No evidence	Not in place
Restrict Entry to country within a certain timeframe	Partly connected to some scholarships	No evidence	No evidence	Not in place
Allow for improving flow of remittances	Yes	No evidence	No evidence	No evidence
Facilitate Creation of Networks	Yes	Yes	Yes	Yes (research networks)

VI Analysis

In the following an analysis of the results is presented. At the end of each section an overview in a table is presented.

Germany

In the German context, the policies which have been consciously adopted or failed to be adopted, indicate risks for a brain drain situation for sending/developing countries (job-seeking period for 12 months, possibility to change reason of stay, no expectation to leave Germany after graduation). Four instruments are identified as leading to risks of a long-term brain drain for sending countries (option for continuous education; prolong stay; receive long term work permit; option for permanent residence). Only two instruments could be identified that facilitate a brain circulation (reintegration / return programmes; facilitate network creation).

The nuanced picture of Germany depicts that the risk for a brain drain situation for developing countries is high. No strong incentives are observed, which could off-set these effects. In addition, few attempts are observed to stimulate a brain circulation, although the importance of brain circulation is acknowledged.

A twofold thinking exists: on the one hand the intention to keep foreign graduates is visible, as they contribute to the economic well-being. Yet on the other hand, it is clearly restrained from stimulating a situation, leading to a brain drain situation for developing countries. This is also why responsibility is placed in the hand of individuals.

The current situation reflects risks for a brain drain situation for developing countries (although this was not anticipated).

A more coherent policy set is needed to reduce this risk.

Table 6 Overview Germany

Overview previously identified instruments and their effect on the sending/developing country
<p>Brain Drain</p> <ul style="list-style-type: none"> • No expectation to leave country after purpose is reached • Option to look for a job after graduation • Change purpose of entering / no purpose related permit • No financial incentives for return • No restrictions on re-entry • No improved flow of remittances <p><i>Long term:</i></p> <ul style="list-style-type: none"> • Option for continuous education • Prolong stay • Receive long term work permit • Option for permanent residence
<p>Brain Gain</p> <ul style="list-style-type: none"> • Reintegration / Return programmes
<p>Brain Circulation</p> <ul style="list-style-type: none"> • Reintegration / Return programmes • Facilitate network creation

Norway

When trying to balance the instruments which were observed, there is on the one hand the strong assumption that students return after graduation. This is complemented by a range of instruments facilitating brain circulation (reintegration/Return programmes; financial Incentives for Return; restrict country with a certain timeframe; improve flow of remittances; facilitate network creation). However, equally strong instruments are in place, that contain risks of a brain drain situation for sending countries. Students from developing countries, not holding a scholarship, have good options for staying on a long term basis in Norway. Although the job-seeking period is short with six months, permanent settlement can be obtained after a period of three years.

It seems as if the overall package of national policies which are adopted points to risks of a brain drain situation for sending countries. A brain gain for sending countries is only reached given that no job is found and scholarship agreements put a barrier on entering Norway. Instruments that facilitate brain circulation do not seem strong enough to set-off the instruments associated with brain drain, yet might compensate them in the long run. A more coherent policy set is needed to reduce the risks.

Table 7 Overview Norway

Overview previously identified instruments and their effect on the sending/developing country
<p>Brain Drain</p> <ul style="list-style-type: none"> • Option to look for a job after graduation • Change reason for entering in the first place • No purpose related permit <p><i>Long term:</i></p> <ul style="list-style-type: none"> • Option for continuous education • Prolong stay • Option for permanent residence
<p>Brain Gain</p> <ul style="list-style-type: none"> • Expectation to leave country after purpose is reached • No immediate long-term work permit • Reintegration/Return programmes • Financial Incentives for Return
<p>Brain Circulation</p> <ul style="list-style-type: none"> • Reintegration/Return programmes • Financial Incentives for Return • Restrict country with a certain timeframe • Improve flow of remittances • Facilitate network creation

The Netherlands

A number of instruments are identified leading to a brain drain situation for sending countries, although the expectation is that students have to leave the Netherlands after their graduation. This 'return' expectation is rather weak and off-set by two aspects: first, a range of options exist to stay in the country i.e.:

seeking work after graduation, permanent settlement and unrestricted access to the labour market after three years. Second, a weak collaboration in the system is observed. The IND does not control whether students are subject to conditions of return in relation to scholarships. Instead, they might grant a new permit – not matching the intention of those scholarships in the first place. Although the 'return' expectation prevails, it is not strongly pursued, identifying a clear mismatch in policies. A range of instruments are visible that lead to a brain drain situation (and a long one in particular). The interviews also stressed that reaching a balanced situation with regard to sending countries is important. Yet, it is rather weakly followed up on this.

The data for the Dutch case leads to the conclusion that the overall package of national policies is pointing to a brain drain situation for sending countries. Although the interviews stressed that no active retention is fostered, the framework in place allows for doing so. The potential international students yield for society is perceived, leading to the conclusion that policies point towards risks of a strong brain drain situation for sending countries.

Table 8 Overview The Netherlands

Overview previously identified instruments and their effect on the sending/developing country
<p>Brain Drain</p> <ul style="list-style-type: none"> • Option to Look for a job after graduation • Change reason for entering in the first place • No purpose related permit • No Reintegration/Return programmes • No financial Incentives for return • No restrictions on re-entry • No improved flow of remittances <p><i>Long term:</i></p> <ul style="list-style-type: none"> • Option for continuous education • Prolong stay • Receive long term work • Option for permanent residence permit

Overview previously identified instruments and their effect on the sending/developing country
Brain Gain <ul style="list-style-type: none"> • Expectation to leave country after purpose is reached
Brain Circulation <ul style="list-style-type: none"> • Facilitate network creation

The United Kingdom

The overall package of policies identifies a number of instruments posing risks for a brain drain situation for developing countries which are considered not to be set-off. Particularly the option to leave the country after graduation does not hold in light of the options which exist after graduation. Yet, a rather indifferent treatment is observed as the United Kingdom claims to have implemented these graduation options in order to provide graduates with more than just a British degree. Accordingly, the impression is that national policies tend to risks of a brain drain situation for sending countries. Some instruments would rather confirm a long-term brain drain, i.e.: permanent residence. Although it is not actively tried to retain or 'return' students, the instruments in place can lead to a brain drain (even a long-term one); responsibility is placed in the hands of individuals to use these options.

Table 9 Overview the United Kingdom

Overview previously identified instruments and their effect on the sending/developing country
Brain Drain <ul style="list-style-type: none"> • Option to Look for a job after graduation • Change reason for entering in the first place • No purpose related permit • No Reintegration/Return programmes • No financial Incentives for return • No restrictions on re-entry • No improved flow of remittances <p><i>Long term:</i></p> <ul style="list-style-type: none"> • Option for continuous education • Prolong stay • Option for permanent residence

Overview previously identified instruments and their effect on the sending/developing country
Brain Gain <ul style="list-style-type: none"> • Expectation to leave country after purpose is reached • Not receive long term work permit
Brain Circulation <ul style="list-style-type: none"> • Facilitate network creation

VII Discussion and Conclusion

Considering these results, the four countries have adopted a number of policies enabling individuals to stay in the country and few policies stimulating/enforcing a return. The policies adopted are not full covering for the mobility of students from developing countries and the issue of brain drain and brain gain is not high on the agenda. Although the countries stated that a brain drain situation for developing countries should not be the result of their domestic policies, the current picture of the instruments adopted confirms risks of a brain drain situation for sending countries.

All countries reflect strong indicators of the skilled migration approach by placing emphasis on the wider functions foreign students yield for the economy. However, this is not surprising in a globalising world. In addition countries obviously struggle for a balance in their policies: on the one hand there is a high need for highly skilled workers yet on the other hand the capacity building idea shall be maintained. Thus it might be difficult to have a coherent set in place, combining the two aspects.

Looking at this from a slightly different point of view, one can ask: although the policies adopted indicate clear risks of brain drain for sending countries, is the current situation necessarily bad? Are developed countries not giving students from developing countries options they might not have in the first place?

They provide an education, allow for a certain working period and if students return, they are equipped with good knowledge and experiences. Developing countries are not only exposed to a brain drain situation but might also benefit from this mobility. A well-connected Diaspora might counterbalance a brain drain situation and lead to a win-win situation in the long run. This can be facilitated by governments, yet lies to a large extent in the hands of individuals themselves.

A conscious management of the situation is called upon the countries involved (Lowell, et al., 2004). Receiving countries should be clear on the reasons for attracting students from developing countries and should in turn provide a policy package in line with these needs. In addition, countries should be aware of the effects (also the unintended) their policies have (i.e.: if an active return policy exists for students from developing countries, dangers of brain drain might occur). Mismatches of current policies should be ruled out and the focus should be on the mutual benefits that result from brain circulation. More supporting instruments for this would be desirable.

Attracting students to a country entails also responsibilities, rather than just focussing on issues surrounding skilled migration and economic reasons. Politicians could reconsider to put this issue on a European level and define common goals. It is particularly important to overcome a situation when students from developing countries are forced to leave one European state, and go to another one instead. Yet, the migration field is a sensitive issue of national politics, leading to doubts in terms of realisation.

Suggestions for further research

This study is a starting point in the field. For a more complete picture, data on mobile students and their preferences (to stay/leave after graduation; how easy it is to stay etc.) would be desirable. In addition to call a situation a brain drain or a brain gain mathematical calculations are required. Often the data needed for this (outflow rates, inflow rates, amount of remittances etc.) is not sufficiently available, making it difficult to compare and calculate these economic weightings (Carrington & Detragiache, 1999; Koser & Salt, 1997; Wickramasekara, 2002). It would also be beneficial to collect data on how post-graduation strategies have changed over the last years.

Appendix 1: List of Developing Countries

The concept of developing countries is based on the World Bank classification. Countries are clustered accordingly to their gross national income per capita and calculated accordingly to the Atlas method¹³. Countries being categorized as low income and lower middle income are considered developing countries here. All other countries not falling into these categories are considered developed countries (The World Bank, 2009):

Low-income economies (43)

Afghanistan	Guinea-Bissau	Rwanda
Bangladesh	Haiti	Senegal
Benin	Kenya	Sierra Leone
Burkina Faso	Korea, Dem Rep.	Somalia
Burundi	Kyrgyz Republic	Tajikistan
Cambodia	Lao PDR	Tanzania
Central African Republic	Liberia	Togo
Chad	Madagascar	Uganda
Comoros	Malawi	Uzbekistan
Congo, Dem. Rep	Mali	Vietnam
Eritrea	Mauritania	Yemen, Rep.
Ethiopia	Mozambique	Zambia
Gambia, The	Myanmar	Zimbabwe
Ghana	Nepal	
Guinea	Niger	

Lower-middle-income economies (55)

Albania	Honduras	Paraguay
Angola	India	Philippines
Armenia	Indonesia	Samoa
Azerbaijan	Iran, Islamic Rep.	São Tomé and Príncipe
Belize	Iraq	Solomon Islands
Bhutan	Jordan	Sri Lanka
Bolivia	Kiribati	Sudan
Cameroon	Kosovo	Swaziland
Cape Verde	Lesotho	Syrian Arab Republic
China	Maldives	Thailand
Congo, Rep.	Marshall Islands	Timor-Leste
Côte d'Ivoire	Micronesia, Fed. Sts.	Tonga
Djibouti	Moldova	Tunisia
Ecuador	Mongolia	Turkmenistan
Egypt, Arab Rep.	Morocco	Ukraine
El Salvador	Nicaragua	Vanuatu
Georgia	Nigeria	West Bank and Gaza
Guatemala	Pakistan	
Guyana	Papua New Guinea	

¹³ See for more information on the Atlas method:

<http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20452009~menuPK:64133156~pagePK:64133150~piPK:64133175~theSitePK:239419~isCURL:Y~isCURL:Y,00.html>

Appendix 2: Enrolment patterns of students from developing Countries compared to total enrolment.

Source: UNESCO & UIS (2009); DAAD & HIS (2009)

Norway	Total Enrolment	Students Developing Countries	Percentage
1999	187.482	1.517	0.81%
2003	212.395	2.047	0.96%
2007	215.237	3.995	1.86%
Germany	Total Enrolment (HIS data)	Students Developing Countries	Percentage
1999	1.801.233	44.044	2.45%
2003	1.938.811	70.325	3.63%
2007	1.985.765	70.620	3.56%
Netherlands	Total Enrolment	Students Developing Countries	Percentage
1999	469.885	3.843	0.82%
2003	526.767	5.770	1.1%
2007	590.121	3.743	0.64%
UK	Total Enrolment	Students Developing Countries	Percentage
1999	2.080.960	32.508	1.5%
2003	2.287.833	71.913	3.1%
2007	2.362.815	131.824	5.5%

Appendix 3: Sending countries of international students in the countries under study.

In the table below data is presented for the four countries under study. First the top five sending countries of international students are presented. In turn it is illustrated what the top five developing countries are having international students in the system.

Norway					
Top 5 Sending countries	Sweden	Denmark	Russian Federation	China	Germany
	1.264	840	789	725	656
Top 5 Developing Sending Countries	Russian Federation	China	Islamic Republic of Iran	Ethiopia	Iraq
	789	725	318	281	232
Germany					
Top 5 Sending countries	China	Poland	Russian Federation	Bulgaria	Turkey
	23.791	12.592	12.047	11.486	7.165
Top 5 Developing Sending Countries	China	Ukraine	Cameroon	Morocco	Republic of Korea
	23.791	6.870	5.139	4.369	3.901
The Netherlands					
Top 5 Sending countries	Germany	China	Belgium	Indonesia	Poland
	10.170	1.789	991	442	401
Top 5 Developing Sending Countries	China	Indonesia	Suriname	Morocco	Vietnam
	1.789	442	313	234	174
United Kingdom					
Top 5 Sending countries	China	India	Ireland	Greece	USA
	49.594	23.833	16.254	16.051	15.956
Top 5 Developing Sending Countries	China	India	Malaysia	Nigeria	SAR Hong Kong
	49.594	23.833	11.811	11.136	9.639

Appendix 4: Overview Interviews & Written Communications

Country	Telephone Interviews/ Written Communication
Germany	<ol style="list-style-type: none"> 1. Written Communication Federal Ministry for Education and Research 2. Written Communication Federal Ministry of the Interior 3. Written Communication German Rectors' Conference 4. Written Communication Eurydice Unit 5. Written Communication <i>Deutsches Studentenwerk</i> 6. Written Communication German Academic Exchange Service (DAAD) 7. Written Communication The Federal Chancellor 8. Telephone Interview Office for Migration and Refugees
Norway	<ol style="list-style-type: none"> 1. Written Communication Ministry of Justice 2. Written Communication International Students' Union 3. Written Communication International Organisation for Migration Norway (IOM) 4. Written Communication Norwegian Centre for International Cooperation in Higher Education (SIU) 5. Telephone Interview and Communication Norwegian Directorate of Immigration (UDI) 6. Telephone Interview Norwegian Organisation for Development Cooperation (NORAD)
The Netherlands	<ol style="list-style-type: none"> 1. Written Communication Netherlands organization for international cooperation in higher education (Nuffic) 2. Written Communication Ministry of Justice 3. Telephone Interview Ministry for Education 4. Telephone Interview <i>Immigratie- en Naturalisatiedienst</i> (IND)
The United Kingdom	<ol style="list-style-type: none"> 1. Written Communication British Council 2. Telephone Interview Department for Business, Innovation and Skills
Non-Governmental Organisations	<ol style="list-style-type: none"> 1. Written Communication European Commission - Directorate General on Education and Culture

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