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Developing Corporate Knowledge and a BAA plc Policy Position on Aircraft Emissions and Climate Change

A Project Submitted to Middlesex University in partial fulfilment of the requirements for the degree of Doctor of Professional Studies

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Abbreviations

ACEMA	European Association of Aerospace Industries
ACBE	Advisory Committee on Business and the Environment
ACI	Confederation of International Airports
AOA	Airport Operator Association
BSG	Business Steering Group
CwtC board	Contract with the Community board
DEFRA	Department for Environment Food and Rural Affairs
DETR	Department of Environment Transport and the Regions
Dprof	Doctorate in Professional Studies
FFF	Forum for the Future
GAPE	Group Airport Planning and the Environment
ICAO	International Civil Aviation Authority
IPCC	International Panel on Climate Change
IPPR	Institute of Public Policy Research
SD	Sustainable Development
SDC	Sustainable Development Commission
SP	Scenario Planning
SPP	Scenario Planning Process
SPRU	Science and Technology Policy Research Unit
WBCSD	World Business Centre for sustainable Development

Acknowledgements

1 Introduction

The aviation sector is faced with a difficult sustainability challenge. It is one of the fastest growing global industries, with a projected growth rate of 5% a year and an important role in the global economy, yet it is believed to have a moderate but rising impact on the global climate through the emission of global warming gases into the atmosphere. Indeed air travel is now the world's fastest growing source of climate change emissions.

1.1 Project aims

In response to this sustainability dilemma, this work based research initiative aims to take forward BAA plc's (formerly the British Airports Authority) sustainable development (SD) programme and develop a BAA policy position on aircraft emissions and climate change. The initiative intended to make an impact in two main areas; firstly in developing BAA's awareness and understanding of the issue of aircraft emissions and climate change and its relevance to the business and secondly in the development of a BAA policy position and action plan to address the issue.

1.2 Project outcomes

The work has resulted in a published policy position on aircraft emissions and climate change (Appendix 6.7) and a process which has served to increase the awareness and understanding of the issue within BAA (Chapter 4, 5, 6). An action plan designed to implement this strategy has also been developed (Appendix 7.1). The project also presents a model for sustainability policy development in BAA (Chapter 7) and serves to demonstrate the role of the work based researcher in a business and sustainability policy making setting (section 7.7)

In Chapters seven and eight of the project summary, two sets of recommendations are presented; one aimed at BAA, considers how the business should take forward its SD programme, in relation to climate change (Section 7.8). The other is aimed at

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[1] Intergovernmental Panel on Climate Change (1999) *Aviation and Global Atmosphere* Cambridge University Press

sustainability professionals embarking on similar policy development initiatives or change management roles in the private sector/ public sector (Chapter 8).

In addition, the research prompted the company to question its understanding of SD and its environmental responsibilities as a leading airport business and that of its customers, the airlines. As a result the initiative assisted in widening the scope of BAA's SD programme and has encouraged the development of a number of other work streams, which are currently underway. These include the development of an internal leadership model for SD, a sectoral influencing strategy and a review of BAA's conceptual understanding of SD (Appendices 7.2, 7.4)

1.3 Climate change, aviation and BAA's position

When work began BAA had no formal position on aircraft emissions and climate change. Indeed, the understanding of the issue was fairly limited, with some pockets of interest and expertise existing in the company's Environment and Planning teams. Up until 1999 the company was reluctant to take on responsibility for this issue, however, in view of the increasing public interest and the fact that BAA plans to develop airport capacity in the UK, it was clear that the company's SD programme should be widened to explore the issue of aircraft emissions in some detail.

1.4 Personal understanding of sustainable development

This research began shortly after I completed the Forum for the Future's (FFF) masters programme in Leadership for Sustainable Development. Upon concluding the course my understanding of SD was ideologically driven. It consisted of a vision of de-coupling economic growth with resource use and ensuring that opportunities and resources were shared equally between cultures and people. I believed that the ultimate aim of SD was a global economy that no longer exploits and puts pressure on natural capital (the Earth's living systems) and human capital (people). I considered global climate change and the alleviation of poverty to be two fundamental SD priorities.

However, in addition to developing a ideological understanding of SD the FFF course equipped me with a more pragmatic view of how sustainability might be achieved; namely through a democratic and political process of change that requires the involvement of all parts of society and international communities. This work based learning initiative provided an ideal opportunity to understand the mechanics of such a process in some detail. It also allowed me to develop and test my skills in creating and maintaining change in an unfamiliar business environment.

1.5 Role of business in sustainable development

The business sector has, undoubtedly, a key role in the promotion of SD. In recent years this has been emphasised by the increased power and influence that the corporate sector has gained through the globilization of the world's economics, markets and culture. This project summary reflects on the role of business in SD and the scale and mechanisms of change that the sector needs to adopt if it is going to contribute successfully to a more sustainable world.

The BAA SD programme began, informally, in 1992. The main driver for BAA' s SD programme is to secure future planning consents by demonstrating how growth in airport capacity can become more sustainable. The programme has focused mainly on the need to reduce BAA's environmental impact in five key areas (climate cbange, waste, air quality, public access and noise) and in developing BAA's community support and stakeholder dialogue programmes around the UK airports.

1.6 Policy development process

The main approach adopted in this research was action research policy development. This is a pragmatic learning approach which focuses on making a change, evaluating the outcome and then making another change (a change and evaluation approach). This methodology allowed the policy development to be constantly reviewed and refined to ensure that it was appropriate to BAA and the evolving circumstances. A number of supporting research techniques were also employed including the business

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tool scenario planning, semi- structured interviews and some methods taken from the ethnographical approach.

1.7 Researcher's position in the organisation

1 managed this initiative in my role as Sustainability Advisor in BAA's Group Airport Planning and Environment team (GAPE). The environmental section in GAPE is a small team of four. Its core objective is to 'keep BAA one step ahead of the game in the identification and management of environmental and social issues and to facilitate the business objective of sustainable development'. The centre of expertise develops and manages the integration of environmental, social and resource use policy throughout the company.

However, this was a collaborative initiative which involved working with different colleagues inside and outside BAA. Collaborative team members included; Kathryn Barker (Head of Group Environment), Phil Dunn (Environment Advisor), Alison Livesley (Corporate Strategy Manager), Liz Tooke (Issues and Campaign Manager) and Lynne Meredith (Planning and Environment Director). Their involvement was critical in four key areas, namely; taking the lead in discussion when appropriate; reflecting and feeding back on the policy development process; understanding the intricacies of the business approval process and lastly in sponsoring the work. A close relationship with FFF Business Programme also provided invaluable support.

Working in GAPE and supported by collaborators, I was ideally placed to develop understanding and a policy position with input from senior managers across the group. In addition, the environment teams broad outlook, its strong external focus and good relationships with stakeholders allowed the complexity of the issues to be fully addressed whilst ensuring consensus was developed across the company. However, on occasions the work was incredibly challenging, this was compounded by the fact that the initiative began just four months after joining the organisation and was my first full time position.

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1.8 Structure of project report

This report provides a rationale and a critical reflection of the policy development initiative and outcomes. Material developed for this business is appended to this summary as examples of the works 'product' and is referred to throughout the report (Appendix 1.1-7.5). These products are in the form of presentations, scenarios and policy positions rather than detailed reports and strategies, as this was the style of output required by BAA.

The report is structured into eight chapters. The second chapter describes my personal ideology and understanding of SD. Chapter three offers some background detail on BAA and its SD programme. Chapter four presents the methodology. Chapter five describes the project activity. Chapter six explores the impact of the work. Chapter seven discusses the success and failure of the policy development model and makes recommendations to BAA on how to take their climate change strategy and SD programme forward. Finally, chapter eight offers some recommendations to future change agents working on SD issues in business and the public   sector.

2 Rationale For Policy Development

2.1 Personal ideology

Prior to undertaking the FFF masters programme I obtained a BSc (Hons) in Environmental Science. However, I began my undergraduate degree as an Ecology student, but I soon became aware that my main motivation and commitment to the environment was to 'making and creating change' at the social and political level rather than studying the intricacies of the natural world and systems. As a result I moved to the more applied multi-disciplinary Environmental Science degree. Following on from my degree the FFF masters programme gave me the ideal opportunity to address these themes further and develop my skills and understanding on how to make change, on a pragmatic level, in different sectors of society.

I base my understanding of SD, like many environmentalists and sustainability professionals, on the concept of environmental capacity, which suggests there are local and global environmental limits to development and activity. This is supported by Daly (1997) who states that the environment is not a minor factor in production but is rather *"an envelope containing, provisioning and sustaining the entire economy"*[2]. Going beyond these environmental limits means the destruction of natural capital and, in the long term, will affect the quality of life of current and future generations. There is a growing amount of evidence to suggest that current consumption rates of natural resources and the use of biological sinks are stressing these natural systems to the point of their near collapse. For example, most marine scientists suggest that the oceans cannot sustain the current annual total catch and predict the near collapse of many of the worlds fish stocks.

SD, therefore, poses a very urgent and practical challenge for the world; how do we find a way to meet the genuine needs of its citizens and those of its future generations fairly, without degrading its life systems or biosphere? As Porritt (1984) suggested this means a choice between "what we have now (a consumer

economy) and what we will need in the future (a conserve economy)"[3]. This is coupled with the imperative for a socially just society which meets people's needs fairly, including a just distribution of the world's wealth and opportunity. Jacobs (1991) argues that, on a practical level, this means that;

"in promoting improvement in living standards, economic policy has to ensure that the environment is sustained for the sakes of future welfare"[4]

However, definitions of SD differ. Some are based on the concept of environmental limits and some are less environmentally driven but require progress to be made on economic, social and environmental objectives. However, I share Giddens (1990) view that these definitions should be considered guiding principals rather than precise formulas and that there is little reward in arguing for one definition over another. Rather, SD advocates should accept that SD, like democracy or justice, is a concept that many people will agree with in principle but in implementing SD there is always likely to be some disagreement[5]. Although I have a strong personal perspective on SD it was clear, from the experience gained on the FFF master programme, that in entering my role at BAA I should work with the understanding and agreement that already exists within the company, rather than immediately concerning myself with differences in definitions and perspectives of SD that may exist.

2.2 Personal approach to the doctorate and work at BAA

The political nature of SD was a key theme of the FFF masters programme. Whilst undertaking the course I noted that in the dynamic of promoting such change, in whatever sector, there appears to be two key groups, the activists and the pragmatists. The pragmatists translate and debate key messages with decision

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[2] Hawken, H. and Lovins, A. and Lovins, L. (1999) *Natural Capitalism The Next Industrial Revolution* Earthscan

[3] Porritt, J. (1984) *Seeing Green The Politics Of Ecology Explained* Basil Blackwell LTD

[4] Jabocs, M. (1991) *The Green Economy - Environment, Sustainable Development and the Politicos of the Future* Pluto Press

[5] Giddens, A. (1990) *The Third Way: The Renewal of Social Democracy* Polity Press

makers, whilst the activist's, challenge the status quo and the pace of change and, in doing so, keep the issues political and in the minds of decision makers.

My belief in the growing role of pragmatism, particularly as society becomes more aware of sustainability challenges, acted as a key driver for my work in BAA. I felt that there was a crucial role for 'internal' dialogue, debate and challenge to address some of the fundamental sustainability issues facing BAA and the wider business sector. I saw this work based research as an opportunity to learn about the dynamics of promoting change in a large private sector organisation.

In conclusion, therefore, I approached my work at BAA with a strong but pragmatic environmental focus. This meant I was concerned about BAA's impacts on the local, national and global environment and communities. Although, I was also aware of the role of the business in the wider society and in promoting and supporting economic growth in the UK, I felt that BAA faced some major environmental sustainability questions, which they had not yet begun to grasp, such as the climate change impact of aviation and the impact of air quality on health.

2.3 Rationale for business sectors engagement in sustainable development

The business sector is often demonised by Environmentalists or activists as value destroying, resource depleting, exploitative, un-transparent and unaccountable. Monbiot, a prolific critic of the corporate sector warns the UK public;

"your democratic rights are under threat. Corporations have become so powerful that they now threaten the foundation of democratic government."[6]

I believe, in some cases, business are, or have been, all of the above. However, in today's interconnected, ever changing, knowledge based world, the private sector now has more power than they have ever had before. Indeed, the internationalisation of business and institutions has become a potent force, which has resulted in nation states tacitly surrendering their powers to business and international institutions,

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[6] Monbiot G. (2001) *The Captive State* Pan Macmillan

such as the World Trade Organisation (WTO). Nordstrom and Ridderstrale (2000) state;

"From an economic perspective the nation state is handing over the reigns of power. We are living in a global economy. Today's markets are virtual and international rather than national. Information knows no boundaries. At a macro level the critical problems and opportunities facing man-kind are not local ones."[7]

Whether environmentalists like it or not the reality is that the balance of power is tipping in the direction of the world's multi-nationals. The ramifications for the SD agenda are clear; businesses must be engaged and see the value in SD if society is to meet the needs of the world's future population of 8.9 billion people by 2050 (currently the world's population is 6.1 billion) and safeguard the worlds resources for future generations.

Fortunately, the pressure for businesses to embrace SD is also growing. Indeed, the relationships between business and consumer are changing with consumers, like business, having more power that they have ever had before. For example, in today's mass media 'CNN world', if businesses abuse their powers, for example, or ignore the environmental impact of their business, their reputations can be ruined within hours through adverse media and internet campaigns.

The likelihood of businesses taking a SD leadership role was reflected in a recent survey of SD experts by GlobeScan. The specialists concluded that the majority of SD leadership would come from business followed shortly behind by Non Governmental Organisations (NGO's), with government's coming in a poor third place[8]. According to Elkington (2000) many business leaders relish this emerging reality, but he argues that in order to meet these responsibilities there will need to be commitment from the public and Government intervention that currently does not exist. This, he suggests, means that over the next decades new forms of corporate and governance structures will need to 'metamorphise' in order to meet this

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[7] Ridderstrale, J. and Nordstrom, K. (2000) *Funky Business* Bookhouse publishing
[8] GlobScan in Elkington, J. (2001) *The Chrysalis Economy- How Citizens CEO's And Corporations Can Fuse Values And Value Creation*

challenge[9]. However, not all businessmen/ women are happy with these new responsibilities, illustrating this point the CEO of Nokia claimed;

" we [business] are being expected to solve problems which business enterprises are not meant to solve- it's politicians who should solve social problems. "[10]

Environmentalists, therefore, ignore the role of business at their peril. Indeed businesses are opportunities which they must embrace. Businesses, such as BAA, are now operating in highly complex and competitive environments. They need high quality advice on the external drivers which are shaping the confusing world, in which they now operate, in order to make decisions on their future strategy and business focus. Environmentalists and sustainable development professionals (SDP's), therefore, have the opportunity to work with business to ensure that these decisions and future strategies help deliver and move towards a more sustainable and just world.

2.4 Anthropogenic climate change

Climate change is undoubtedly one of the most fundamental SD challenges facing the planet. It has been demonstrated to a high degree of certainty that loading the atmosphere with greenhouse gases, mostly as a result of burning fossil fuels, is stressing the atmosphere beyond its ability to sustain the current climate. This may well lead to devastating consequences for every aspect of modern society and natural ecosystems. As physicist Stephen Hawkins recently warned;

"humanity may well not survive the next thousand years because of an asteroid impact, war or climate change."[11]

Indeed, the UK's Advisory Committee on Business and the Environment (ACBE) identified climate change as a strategic issue for business, requiring a long term,

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[9] Elkington, J. (2001) *The Chrysalis Economy- How Citizens CEO's And Corporations Can Fuse Values And Value Creation*

[10] Brown- Humes, C. (2001) *Nokia's dominance of economy prompts worries in Finland* The Financial Times 3 Jan

[11] Hawkins, S. (2000) *Mankind Extinct in 1000 Years* The Times 30 September

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flexible policy framework and a comprehensive range of measures, within which all sectors should play a role, including transport and the domestic sectors[12].

The Kyoto agreement to cut greenhouse gas emissions has led countries and regions to draw up strategies to curb the growth and then cut emissions of a basket of greenhouse gases. For example, in the UK, the government has signed up to cut its emissions by 12.5% by 2012 and has developed a climate change programme which outlines a framework to deliver these emission reductions and more challenging reduction targets in the future[13].

Climate change is a particular challenge for the transport sector. It currently contributes about 30% of the world's total global warming gases[14]. However, use of energy for propulsion is a fundamental requirement of transport, therefore, reducing the intensity in which it uses fossil fuels is particularly difficult. Despite these challenges Bill Ford, from Ford Motor Company, has recently become an advocate of sustainable mobility pledging;

"an emission free vehicle that is built in clean plants, which can actively contribute to our environment. And it can happen within my lifetime."[15]

As yet there are no such advocates or leader for SD in the aviation sector. Although aircraft fuel efficiency has historically improved, on average at a rate of 1-2 % per year for new production aircraft, this trend has been driven mainly by cost and is unlikely to continue in the future. There is no alternative to aviation fuel being developed and commentators think that such a fuel is unlikely to be on the 'horizon' for 40 -50 years.

2.5 Sustainable aviation

Little has been written on the subject of sustainable aviation. Most literature on this subject is either for or against growth of the sector, which collectively present very

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[12] Advisory Committee for Business and the Environment, (1998) *Climate change: A strategic issue for Business* The Stationary Office
[13] DETR (2000) *Climate Change the UK Programme* The Stationary Office
[14] DETR (2000) *Climate Change the UK Programme* The Stationary Office
[15] Wright, M (2000) *Any colour you like Green Futures* September/October 2000. Number 24

black and white arguments which. as Jacobs (1991) suggests, often creates more *"heat than light* [16]*"*. In forming my opinion as to what a sustainable aviation sector would look like I have consulted the following resources throughout the research process;

- **Sustainable Aviation Network (SCAN-UK)**[17] - The UK Sustainable Cities and Aviation Network is a network of experts with the aim to facilitate development of a long-term dialogue about the meaning of sustainable mobility within the aviation industry and its application to sustainable cities.

- **Inter Governmental Panel on Climate Change (IPPC)**- *Special report on Aviation and the Global Atmosphere (1999)* [18] This is the most comprehensive and up to date review of the present and future impacts of aviation on climate change.

- **Institute of Public Policy Research (IPPR)**- *Plane Trading, policies for reducing the climate change effects of international aviation (2000)* [19] This is a detailed analysis of the issues associated with designing an international aviation trading regime

- **Royal Commission on Environmental Pollution (RCEP)**[20]- The Commission has produced three relevant documents to the issue of aircraft emissions and climate change over a number of years. These include;

  ⇒ Report on Transport and the Environment (1994) which reviewed the environmental affects of transport systems, and highlighted the implications of rapid growth in road and air travel[21],

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[16] Jacobs, M. (1991) *The Green Economy - Environment Sustainable Development and The Politics Of The Future* Pluto Press

[17] See http://www.scan-uk.mmu.ac.uk

[18] Intergovernmental Panel on Climate Change (1999) *Aviation and The Global Atmosphere* Cambridge University Press

[19] Hewett, C. *Plane Trading- Policies for Reducing the Climate Change Effect of International Aviation* IPPR

[20] See http://www.rcep.org.uk

[21] RCEP (1994) *Transport and the Environment* The Stationary Office

⇒ Report on Energy - The Changing Climate (2000) which advocated a transformation in the use of energy in the UK to counter climate change. As a contribution to global efforts to prevent excessive climate change, the Royal Commission recommends that the UK should plan to reduce by 60% over the next 50 years the amount of carbon dioxide it produces by burning fossil fuels[22].

⇒ Response by the royal commission on environmental pollution to government's consultation on the future of aviation (2001)[23].

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- **International Civil Aviation Organisation (ICAO) and Airports Council International (ACI) working papers**[24]. These working paper gave me an up to date understanding of the state of the debate at the international level on aircraft emissions and climate change

- **European Commission (EC) European Union (EU) consultation papers and policy documents** - Perhaps the most important of which is the consultation paper *Towards sustainable growth of the aviation sector* (1999), which maps out how the European Commission and parliament sees aviation policy developing over the next decade in Europe and declares that the current growth in the environmental impact of aviation is unsustainable and needs to be addressed[25].

- **UK Government policy documents** - useful documents setting out government policy direction included;

  ⇒ A better quality of life: A strategy for sustainable development for the United Kingdom (1999)[26]

  ⇒ The Future of Aviation The Government's Consultation Document on Air Transport Policy (2000)[27]

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[22] RCEP (2000) *Energy- the Changing Climate* The Stationary Office
[23] See http://www.rcep.org.uk/newsrels
[24] See http://www.icao.org.
[25] Commission of the European Communities (1999) *Air Transport and the Environment. Towards The Meeting The Challenge Of Sustainable Development* Communication from the commission to the council, The European Parliament, The Economic and Social Committee and the Committee of the Regions

⇒ UK Climate Change Programme (2001)[28]

⇒ A Greenhouse Gas Emissions Trading Scheme for the United Kingdom (2000)[29]

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- **Sustainable Development Commission (SDC)**- The SDC's response to the government's consultation on the 'Future of Aviation' was very informative as it took a very environmentally focused but a strategic point of view[30]

- **Natural Capitalism - Hawkens *et al* (2000)**[31]- This book spells out the challenges and opportunities of the 'next industrial revolution'. It is a positive book which frames some of the solutions which will help make the world more sustainable. Although aviation hardly gets a mention, it is clear that this is the style and sort of thinking which will need to revolutionise the sector.

- **AEF**[32]- The Aviation Environment Federation (AEF) is the principal UK non-profit making environmental association concerned with the environmental effects of aviation. These range from aircraft noise issues associated with small airstrips or helipads, to the contribution of airline emissions to climate change.

2.6 Why should BAA have a policy position on climate change?

Aircraft emissions are currently responsible for around 3% of warming in the global atmosphere. Estimating future impacts is fraught with uncertainty, however the Intergovernmental Panel on Climate Change (IPCC) predictions, which are based on different growth forecasts for the sector, engine efficiency, operational improvements and fleet mix, estimate that aircraft could be responsible for up to 5-15% of the total warming by 2050. This means that total aircraft emissions will increase significantly

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[26] DETR (1999) *A Better Quality Of Life - A Strategy for Sustainable Development for The UK* The Stationary Office

[27] DETR (2000) *The Future of Aviation Consultation* The Stationary Office

[28] DETR (2000) *Climate Change the UK Programme* The Stationary Office

[29] DETR (2000) *A Greenhouse Gas Emissions Trading Scheme for the United Kingdom* The Stationary Office

[30] *See* http://www.sd-commission.gov.uk/pubs/av/2001

[31] Hawken, H. *et al* (1999) *Natural Capital the next industrial revolution* Earthscan

over current levels negating the predicted increases in operational and engine efficiencies[33].

Unlike other greenhouse gas emissions, which come under the Kyoto agreement, international air transport, because of its global nature, was excluded from national emissions inventories. As an alternative the International Civil Aviation Organisation (ICAO) was asked, in Article 22 of the Kyoto Agreement to make policy recommendations to the United Nations on how to control and reduce emissions from international air flights by 2008-2012[34]. However, progress at the international level is regarded as a 'painfully' slow, particularly due to the presence of a strong North America industrial lobby which resists regulation or the setting of tough emissions standards for new technology[35]. As a result the European Union is also considering a number of policy measures to control the growth in emissions, however, this is also being heavily resisted by industry.

Traditionally BAA has seen the global impacts of aircraft emissions as the responsibility of the airlines and has not developed an internal policy on this issue. However, in BAA's 1999 annual report the company rejected the possibility of a taxation on aviation fuel stating that a tax would be environmentally ineffective and difficult to introduce and police.

Given the slow progress the sector is making in addressing this issue, in my opinion there is a strong rationale as to why BAA needed to develop its internal understanding and position on the issue of aircraft emissions and global climate change, these include;

• Aviation is the fastest source of greenhouse gas emissions and international aviation is the only source of emissions not currently being addressed by the

[32] http://www.aef.org.uk
[33] Intergovernmental Panel on Climate Change (1999) *Aviation and the Global Atmosphere* Cambridge University Press
[34] Intergovernmental Panel on Climate Change (1999) *Aviation and the Global Atmosphere* Cambridge University Press

Kyoto process. Whilst other sectors of the economy prepare to reduce their emissions in absolute terms or reduce the growth in emissions, aviation emissions are growing, unmanaged. As growth in BAA's operation facilitates the growth in these emissions, BAA has a moral duty to understand, manage and help reduce the emissions arising from aviation. As Prof. Paul Ekins (2000) stated;

> *"climate change emissions from aircraft is BAA's biggest sustainability challenge by far."*[36]

- The issues of global sustainability of the aviation sector span across the traditional boundaries of organisational responsibility. This means that BAA needs to understand its relationship to global aviation emissions and work actively with different stakeholders to develop strategies in the short and long term. This is a key issue that the company has not understood, up to now, but future engagement in this issue is essential in order to further discussions on the company's SD strategy. This view is supported by the fact that increasingly BAA is being asked questions, by environment groups and investors, on the wider sustainability issues relating to the sector and not just on its own impacts.

- Political pressure within the UK to address this issue in detail is rising. Currently the UK Government in considering the future growth of aviation in the UK. As these policy decisions will inevitably raise questions such as the environmental costs of travel and the climate change impacts of aviation it is clear that the company needs to develop a sound response to these issues, including the climate change impact of aircraft in order to provide additional airport facilities in the South East.

- Mounting pressure from international bodies and environmental groups to cap or reduce the emissions from aviation into the atmosphere has the capacity to alter the development of the aviation sector and may have long term consequences for BAA's development plans.

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[35] Dunn, P. (1999) *Pers. comm*
[36] Ekins, P. (2000) *pers. comm*

- The solutions developed internationally could have operational implications, threats and opportunities for BAA's business.

- A proactive engagement with the issue of aircraft emissions and climate change is in line with BAA's reputation and its developing leadership role in environment and social responsibility

3 BAA

3.1 An introduction to BAA

BAA was privatised in 1987 and is now the largest private sector airport operator in the world. It owns and operates seven UK airports (Heathrow, Gatwick, Stansted and Southampton in England; Glasgow, Edinburgh and Aberdeen in Scotland) which serve over 125 million passengers each year. BAA is also involved in the management of airports in Europe, America, Africa and Australia. The company describes its self as:

"The world's leading airport company. The first and largest airport company to be privatised and the most profitable. We are also leaders at working with our stakeholders."[37]

In addition BAA also owns a number of airport related property, rail and retail companies. However, as figure 1 illustrates BAA's main income is from its airport operations.
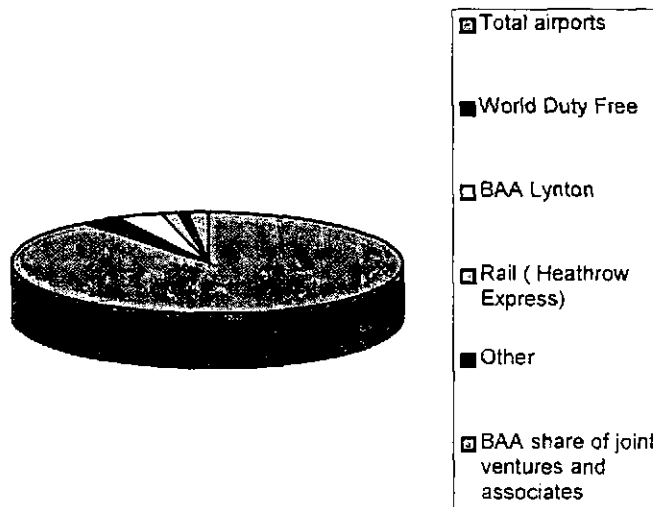
Figure 3.1 - BAA Operating Profit 2000- 2001[38]

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[37] BAA. (2000) *Response to the Future of Aviation Consultation* www.baa.com/consultation

3.2 BAA's core strategy and regulation

In 2000, after a brief period of diversification into property development and airport retailing, BAA announced a renewed strategic focus on developing new airport capacity at current BAA airports, in order to increase profits in the long term.

The income from BAA's three London Airports (Heathrow, Gatwick and Stansted) is regulated to ensure that the company does not take advantage of its near monopoly in London by either delivering a poor service to airlines or acting outside of the public interest. This regulatory regime controls aircraft landing fees, and is reviewed every 5 years by the Civil Aviation Authority and the Competition Commission.

From an SD perspective, the nature of the regulatory regime is interesting, as it inadvertently encourages the development of airport capacity by artificially depressing airport charges. The only way in which BAA can increase its profits in line with shareholder expectations is, therefore, to follow a strategy of achieving maximum growth in volume.

Other regulators of BAA airports include; the Environment Agency, The Department for Environment Food and Rural Affairs (DEFRA), Health and Safety Executive and Local Authorities. These regulators ensure that the company is meeting standards on safety, waste disposal, water and air quality.

3.3 National framework for airport expansion - a critical time for BAA

The Government is currently reviewing the state of the UK's Aviation Industry and considering how it should develop over a thirty year time period. This involves two key work streams, the importance of which grew during the research period. The first is the Government's bill on the 'Future of Aviation'. The white paper, due to published in 2002 and consulted on during this initiative, will present the Government's view on the future growth of the sector and will address issues such as

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[38] BAA. (2001) *BAA annual report and accounts* June 2001

the quality of infrastructure and passenger experience, development of planning law in relation to airport development and crucially the environmental impact of aviation. A number of runway studies make up the second work stream, which will identify possible areas for runway development in the UK, including the South East of England.

The outcomes of these policy reviews will be crucial for BAA and will indicate how much additional airport facilities the company will be able to develop in the UK. Unsurprisingly these reviews have raised some major sustainability challenges for the sector. A prime example of the type of question raised is how to manage the growing air quality and climate change impacts of aviation and whether these adverse impacts, and others, should be allowed to act as a limit on the growth of airports.

Arguing the case for the expansion of the sector, BAA has lobbied Government, stating that aviation's growth can become more sustainable by setting challenging environmental and public transport objectives and by ensuring the benefits of development are shared as widely as possible. The company suggests that although there are significant environmental and social challenges associated with airport expansion, which the company is trying to address, the economic benefit of aviation outweighs these costs;

> *"The success of the aviation industry is also integral to national*
> *competitiveness, economic development and social progress;*
> *and, of vital importance, aviation supports those new economy sectors*
> *on which the country's future prosperity relies."*[39]

More boldly, BAA has stated that the Government should not pose the question of whether it is best to allow airport capacity to grow or protect the environment, rather it should consider the question of how to allow the growth in aviation and protect the

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[39] BAA. (2000) *Response to the Future of Aviation Consultation* www.baa.com/consultation

environment at the same time. However, the company has, as yet, given no real indication of how this can be achieved.

3.4 BAA's approach to sustainable development

Although BAA's SD programme has been supported by the current discussions about airport expansion, the company's SD programme has it routes in the planning inquiry into Heathrow's fifth terminal (T5). This planning inquiry, the longest public inquiry in the UK's history, lasted four and a half years. The decision on whether or not to grant permissions to develop T5 was given in late November 2001 some nine years after the initial planning application was submitted.

The length and expense of the inquiry and the uncertainty it created sent BAA management a clear signal that the environmental and community concerns associated with developing airport infrastructure were likely to strengthen and become increasingly political in the short to medium term. This evoked a company re-think about the way in which it seeks planning consents from local communities, in an attempt to avoid a future of increasingly long, expensive and unpredictable planning inquires. As a response BAA developed its SD programme with the clear business driver to gain the license to 'grow with the support and trust of our neighbours'. This 'strap line' now features in BAA's mission statement.

Other contributions to the business case for SD include; controlling the costs of natural resources, ensuring that BAA has a good reputation with the city and attracting and retaining good quality staff.

BAA aligns its understanding of SD to the Government's definition. This has been interpreted into a number of headline issues;

- Entering into a constructive dialogue with local planning authorities and communities in order to negotiate developments;

- Setting challenging environmental objectives to reduce and mitigate the overall impact of developments;

- Ensuring that the maximum number of people share the benefits of the airport and its development;

- Promoting the national benefit of airport development and aviation's role in developing the UK's 'high value low impact' growth sectors and;

- Ensuring that all staff are equipped with an understanding of SD and how it is relevant to BAA.

Internally, the organisation positions its SD programme as a mechanism to stay 'one step ahead of the environmental groups' to ensure that there are no 'show stoppers' to prevent BAA from meeting its development aspirations. This involves taking on board the views and concerns of local and national stakeholders in the development of airports and attempting to address these concerns in the development of these strategies.

"our sustainable development programme promotes dialogue with those effected by operations. We seek to bring together local authorities, residents and environmental and other interested groups and encourage debate about how we can grow in a way which is acceptable to them."[40]

Box 1 shows how BAA has successfully adopted this approach with regard to development at Gatwick.

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[40] BAA. (2000) *Response to the Future of Aviation Consultation* www.baa.com/consultation

Box 1:Gatwick's Development Strategy

By developing relationships and a dialogue approach with the local community in 2000 Gatwick airport signed a legal agreement to grow the airport capacity from 30 million to 40 million passengers per year. The development involves the extension of a terminal building and new operational facilities. Gatwick made a number of legally binding commitments to compensate the local community and mitigate the impacts of the development. For example, control noise, invest in pubic transport and a community fund to support local community objectives and minimise the airports impact on the environment.

However, one striking omission from the SD programme is any acknowledgement of the growing impact of aircraft emissions on climate change. This absence has also been noted by environmental and sustainability campaigners such as Whitelegg (2000);

" The aviation industry has been very successful in its adoption of an environmental agenda (environmental reports, support of exotic, threatened environmental, appointment of environmental managers, financial support got a professorship of 'sustainable aviation ') but has been less forthcoming on questions of growth and the need for reductions in greenhouse gases."[41]

3.5 Culture and leadership inside BAA

In order to understand the change management process in BAA I felt it important to have an understanding of the cultural and leadership issues that impact upon the behaviour of the business. According to a number of early scene setting interviews with BAA staff and observations, safety, public service, caution and a growing commercial focus categorises the BAA culture. One senior manager described the BAA culture as;

"We are very middle class, middle England, middle aged company... white, non risk takers and sensible- we are a low risk business with steady growth and this

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[41] Whitlegg, J. (2000) *The Plane Truths about Aviation and the Environment* Published by Transport 2000/ Ashden trust

approach is right because it is what the city experts and what our shareholders want"

BAA has obviously worked hard to shake off the formality of a public company. Corporate staff consider it an informal company, where access to senior managers and senior management thinking is fluid. However, at the operational level (e.g. airfield operations, security and fire service) the business is reported to be more hierarchical, formal and traditional in nature and on occasion 'bullying'.

This risk averse approach also appears translated into the way the company manages change and demonstrates leadership. According to one Director;

"BAA is a time-served organisation where promotion is based on a 'face fits' culture. A nice company not ruthless. Good at small improvements but not good at managing a radical agenda."

The main advocates for the SD approach within BAA have been Kathryn Barker (Head of Group Environment) and Lynne Meredith (Group Airport Planning Director). Environmental managers at airports have also demonstrated leadership for SD at the local level.

Amongst the business sector BAA has a good reputation for reporting on SD. However, the company's commitment and leadership is not as public or as bold as companies such as BP and Shell. Reflecting this cautious nature of BAA's culture a senior BAA manager stated;

" We don't want to be leading the way like the BP- Amoco's and Shell's of this world. We need to sit comfortably behind them - so if anyone gets their fingers burnt its them and not us"

In addition , within the sector itself BAA is often quoted as being innovative and leading the way in reducing the social and environmental impact of its operations. John Gummer stated recently;

" Over the 10 years that I have been closely watching the aviation sector in the UK BAA has demonstrated to me that it is far more innovative than BA and some of the other British Airlines and Airports."[42]

In terms of the business using its influence externally there appears to be some confusion with respect to how much influence the company has and how it should be used. In some circumstances the company is fairly bullish about its size and influence within the sector and on other occasions the company tends to down play this influencing role. One BAA manager declared;

" We have so little influence on these global issues - we only have a 3% market of total aviation, I don't think we have much influence"

3.6 BAA's approach to climate change

BAA has developed a long term objective on climate change to cut the emissions from BAA's ground based emissions (emissions from airport buildings and ground operations). This is covered in some detail in box 2. Unlike BAA's objective on noise and air quality, which is a direct response to the concerns of local communities, BAA's objective on climate change aligns to the Kyoto protocol and national Government objectives and has been described as 'challenging' by the former Department of Environment Transport and the Regions (DETR);

" BAA plc has set itself challenging targets for both reducing levels of CO_2 emissions and greater use of renewable energy."[43]

However, BAA's target is not as far reaching as the UK government's Kyoto commitment as it only pledges a 5% absolute reduction on 1990 levels.

[42] Gummer J, (2000) *Speech at a conference on Aviation and the Environment* Frankfurt 13- 13 February 2000
[43] Ward, P. (2000) *Letter from Director of Energy and Waste (DETR) to Mike Robberts Group Technical Director* 7 July

Box 2 Climate Change

BAA has a ten year objective on climate change: - a 5% reduction in absolute CO_2 emissions on 1990 levels by March 2010. This is equivalent to a 60% reduction per passenger and a saving of approximately 110,000 tonnes of CO_2 on forecast emissions by 2010. This will be achieved by;

- Metering and conservation initiatives to reduce predicted growth in energy consumption by 10% in 2010
- Exploring the possible role of Combined Heat and Power Plants (CHP's).
- Improvement in new build efficiency (20% improvement on business as usual)
- Local solar energy schemes and demonstrations of other alternative technologies
- Customer conservation projects and incentives to help customers reduce their consumption by 5%.
- Using training to create an energy focused culture in the company by continuous education and communication initiatives
- Purchase of 10% of total energy from renewable energy by 2010

In conclusion SD has become a fairly major driver for BAA and is seen as key to the future of the business. The company has an evolving and long term SD programme, with the main business driver being, the need to help secure future planning consents from local and national governments. This has included developing a number of long term environmental objectives of which climate change is one. The role of the SD programme has gained profile over the period of this initiative, owing to increased Government awareness of the strategic issues associated with the development of aviation and aviation facilities.

In terms of leadership, culture and influence the business is not a flamboyant or creative organisation. It does not embrace change, risks or high profile publicity strategies. Rather the company chooses to keep a low profile and continue its business, as far as possible, away from the glare of the public eye.

4 Methodology - Action Research Policy Development

This chapter explains how the initiative was carried out. The methodology employed was the action research approach, adopted due to its focus on learning and development (sections 4.1 and 4.2). Using the action research approach a research scheme was developed (sections 4.3-4.8), which included the employment of other research techniques such as the business tool scenario planning, surveys and methods taken from the ethnographical approach (sections 4.6, 4.11). The collaborative nature of this research strategy is also discussed (section 4.7). The chapter finishes with some insider research issues which were addressed throughout the work programme (section 4.12).

4.1 Action research policy development model

This project centres around questions of organisational change and development in a complex commercial environment. The research strategy adopted was action research policy development. This is a cyclical process and requires practitioners and researchers stakeholders to study and reflect on their research context, make an intervention or change and then reflect on the success and failure of the intervention (see Figure 4.1). Whyte (1989) defines, this style of participatory action research as;

"a process in which some of the people in the organisation / community being studied actively participate with the professional researcher throughout the research process, from the initial design to the final presentation of the results and discussion of the action implementation."[44]

Action research is a strategy for social research, rather than a specific method, which links the research to the context. Action research theory does not specify the method of data collection, rather it allows practitioners to use a range of research tools and techniques to perform the 'change and evaluation' process. My role in this initiative,

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[44] Whyte, W (1989) in Whtye, W (1991) *Participatory Action Research* Sage Publishing

as the practitioner/researcher, is the 'change agent'. Pettigrew (1988) describes the change process as;

> *'an untidy cocktail of quests for power, competing views, rational assessment and manipulation.*'[45]
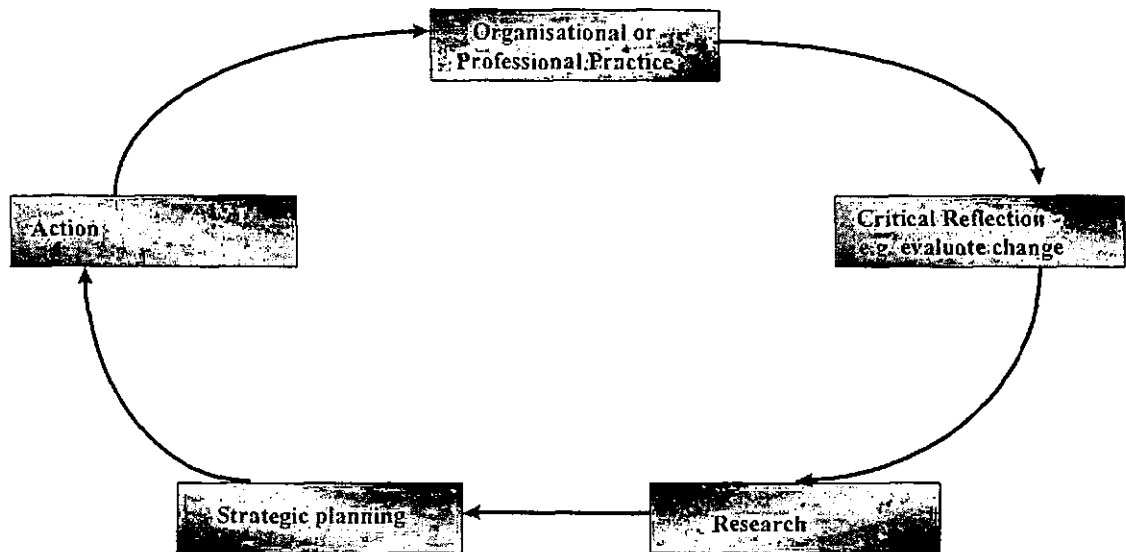
Figure 4.1 - The cyclical process in action research adopted for this initiative (adapted from Denscombe 1998[46])

4.2 Rationale for employing action research

Surveying the literature and considering the objectives of this research and the longer term objectives of the sustainable development programme a clear rationale developed as to why action research was the preferred research strategy. This is outlined below;

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[45] Pettigrew (1988) in Buckan, D *et al* (1992) *The expertise of the Change Agent: Public performance and backstage activity* Prentise Hall
[46] Denscombe, M. (1998) *The good research guide* Open University Press

- **Learning and creating a change:** in support of BAA's SD programme, which is trying to achieve a cultural change in the way the business relates to issues of SD, my objective was to try and create change and organisational learning through a policy development process and review. With this aim in mind, I wanted to embed an understanding of the issues within the organisation and in doing so ensure that the ownership of the issue stayed with the business and not with me and GAPE. Action research seemed the ideal mechanism to deliver this aim.

- **Pragmatism:** I started work on this project four months after joining BAA. As a result I did not have a detailed knowledge of the issues relating to climate change and aviation. I was equally unclear about how the business developed policy and due to my junior role and lack of profile in the organisation, I felt that it would be difficult to create change without the full participation and support of the more senior team members.

Furthermore the issue was described to me as 'scary' by one Executive Committee member, indicating that this was not a comfortable subject for the company to address. The complexity of the issues also indicated that the policy and subsequent action would need re-visiting as the issue developed and became increasingly political.

Given these factors (anxiety caused by the subject, my lack of knowledge of the policy development process, the need to develop a trust relationship between myself and the research stakeholders), it seemed sensible to develop a work programme with the maximum input of research stakeholders.

- **An opportunity:** The participative nature of this research approach was a clear opportunity to manage and deliver a research programme and get 'state of the art' real time information on the opportunities and challenges SD poses the business sector through first hand stakeholder feedback and participant observation. In

addition the self - development nature of action research allowed me to focus on my own performance in the research process and collect data to support the more personally reflective nature of the Doctorate in Professional Studies (DProf) i.e. - the role, advantages and disadvantages on the work based researcher.

Checking these criteria against the body of theory on action research demonstrates that this work was suitable for the action research approach. Denscombe (1998) described the main characteristics of action research as; practical, change orientated, cyclical, and participate[47]. All of the elements were present in this work programme.

Consequently the survey, case study and experimental approach were all systematically rejected as none of these research approaches offered the flexibility, participative nature, and reflective qualities that the action research strategy offered.

4.3 Advantages and disadvantages of action research

The main benefits of action research have already been widely discussed and include;

- Its ability to address a practical problem;
- Contribute to organisational learning and personal development;
- Benefits in democratising the research process and ensuring the ownership of the problem stays with the participants.

However, action research is, by its very nature context specific, this makes it more difficult to generalise from research findings. Furthermore Irgens and Karlsen (1988) suggest that mixing theory with practice creates a difficulty in meeting the necessary standards of scientific rigour and validity[48]. Denscombe (1998) also suggests that a number of ethical issues are raised by the action research process, including; possible constraints posed by the work place setting and the likely impartiality of the

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[47] Denscombe, M. (1998) *The good research guide* Open University Press
[48] Irgens, K. and Karlsen, G. (1998) in Whtye, W (1991) *Participatory Action Research* Sage Publishing

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researcher in critiquing the adopted researcher approach. These issues are dealt with in section 4.11.

external drivers and develop leadership for the issue within the business. In addition, the emphasis of the theory on opportunities and threats and in developing competitive advantage also pointed to the need to employ a business risk and business opportunity approach. Finally, as the remit of this work was to develop a policy rather than review BAA's strategy, strategic management theory suggested that questioning the business strategy as a result of the policy development work would prove problematic.

4.4 `Policy change and policy making theory

Policy change and policy theory is dominated by literature examining the relationship between the nation state and civil society in developing public policy and delivering the desired policy outcomes. Analysis of government and pressure group relationships is conducted within the confines of three paradigms: pluralism, corporatism and marxism (Smith 1993)[49]. Although each of these theories considers the role of business in the policy development process in some detail, as Ham and Hill (1993) point out, the literature does not explore the development of policy inside institutions, other than governments themselves[50].

It is helpful however, in this context of developing policy in the private sector, to understand the relative power of corporates within each of these theoretical models. In corporatism business is seen as hugely powerful and as playing a leading role in the development of national economic policy. Within the pluralism paradigm all groups from civil society have access to power, however the distribution of power is not even and the exact distribution of influence alters on a case by case basis. Finally, in marxism power is held by a governing elite in which business is often

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[49] Smith, J. (1993) *Pressure, power and policy state autonomy policy networks in Britain and the Untied States* Harvester Wheatsheaf

[50] Ham, C. and Hill, M. *The policy process in the modern capitalists state* Harvester Wheatsheaf

institutionalised into a position of considerable influence at the expense of other interest groups. In addition, marxism presumes that eventually policy will favour the interests of capital (Smith 1993).

Literature on business and strategic management does more to illuminate the policy development process inside business and institutions. For example, Wheelen and Hunger (2000) state that;

" originally called business policy, strategic management incorporates such topics as long-range planning and strategy[51] *"*

Wheelen and Hunger's (1993) model for strategic management is described below. Not unlike the action research approach adopted in this work programme they point out that the entire process is subject to continuous review and results in continuous learning[52];

Part 1- Environmental Scanning. Understand the possible opportunities and threats in external world and its internal strengths and weaknesses e.g. external - global trends, societal values, environmental concerns, consumer behaviour, strength of competitors and internal structure, culture, resources.

Part 2- Strategy formation. Develop a mission, objectives, strategies and policies to formulate and take forward the strategy. This is developed by finding a 'strategic fit' between external opportunities and internal strengths in order to find competitive opportunities.

Part 3 - Strategy implementation. Develop programmes, budgets and procedures in order to develop the strategy into an action plan.

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[51] Wheelen, T. and Hunger, J,D. *Strategic Management and Business Policy* Prentice Hall
[52] Wheelen, T. and Hunger, J,D. *Strategic Management and Business Policy* Prentice Hall

Part 4- Evaluate and control. Consider actual performance against stated strategy.

In this model there appears to be an opportunity for sustainability issues to be considered in some detail at part 1 of the strategic management model. As during this Environmental Scanning stage stakeholder concerns should be represented, particularly if long term issues, opportunities and concerns are considered. Indeed, this is very similar to the 'Radar Screen' approach advocated by Elkington in order to understanding the external sustainability agenda[53]. To enable sustainability issues to be factored into the decision making process at the strategy formation stage the definition of competitive advantage would need to include political and reputational advantages as well as short term commercial opportunities. However, this may well be difficult in the context of the short term need to maintain shareholder value. Interestingly, Wheelen and Hunger (1993) also warn that the best strategies are not arrived at by consensus but when everyone argues[54]. This points to the fact that different strategic choices may well be contentious and by employing consensus to find common ground companies may end up squandering opportunities. Finlay (2000) also notes that within models of strategic management, policy development is the result of a considered corporate strategy and should not stand alone as an individual work stream[55].

At a more practical level, a recent survey of top UK companies, James *et al* (1999), identified a number of external influences and behavioural mediating and moderating effects which dynamically act to determine the nature of corporate environmental policy[56]. The table below summaries the studies conclusions.

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[53] Elkington, J. (1997) *Cannibals with folks, the triple bottom line of the 21st Century* Capston.
[54] Wheelen, T. and Hunger, J,D. *Strategic Management and Business Policy* Prentice Hall
[55] Finlay, P. (2000) *Strategic Management an Introduction to Business and Corporate Strategy* Prentice Hall
[56] James, P. and Ghobadian, A. and Viney, H. and Liu, J. (1999) *Addressing the divergence between environmental strategy formulation and implementation* Management Decision Volume 37 Number 4 pp. 338-348

Table 4.1 External drivers, mediating and moderating factors acting upon corporate environmental policy making

External Drivers	Internal Mediating Factors- factors which shape companies' response to external factors	Internal Moderating Factors - aspects of an organisations capability which shape companies' response to external factors
Legislation key driver	Significance of strong leadership	Costs
Social Pressure and Competitive advantage was not identified as consistently important	Importance or right public image	Complexity and capital intensity of operations

Surveying the literature on policy development indicated some of the factors that could prove important in the project's delivery. These included emphasising the need to map out the external drivers and develop leadership for the issue within the business. In addition, the emphasis of the theory on opportunities and threats and in developing competitive advantage also pointed to the need to employ a business risk and business opportunity approach. Finally, as the remit of this work was to develop a policy rather than review BAA's strategy, strategic management theory suggested that questioning the business strategy as a result of the policy development work would prove problematic.

4.5 Action research scheme

The action research policy development scheme employed in this initiative is presented in figure 4.2. The scheme had five stages and distinct feedback mechanisms. In reality the execution of some of these research stages overlapped.

Stage 1- Once the subject of aircraft emissions and climate change had been selected Kathryn Barker and I began a process of getting 'buy in' and ideas on how to approach the subject from a number of internal and external BAA stakeholders

Stage 2 - The design and planning of the policy development scheme

Stage 3 - The first attempt to implement the policy development scheme

Stage 4- The consolidation and adjustment of the policy development process and outcomes (as a consequence of reflection with stakeholders)

Stage 5- The review of outcome and definition of new problems
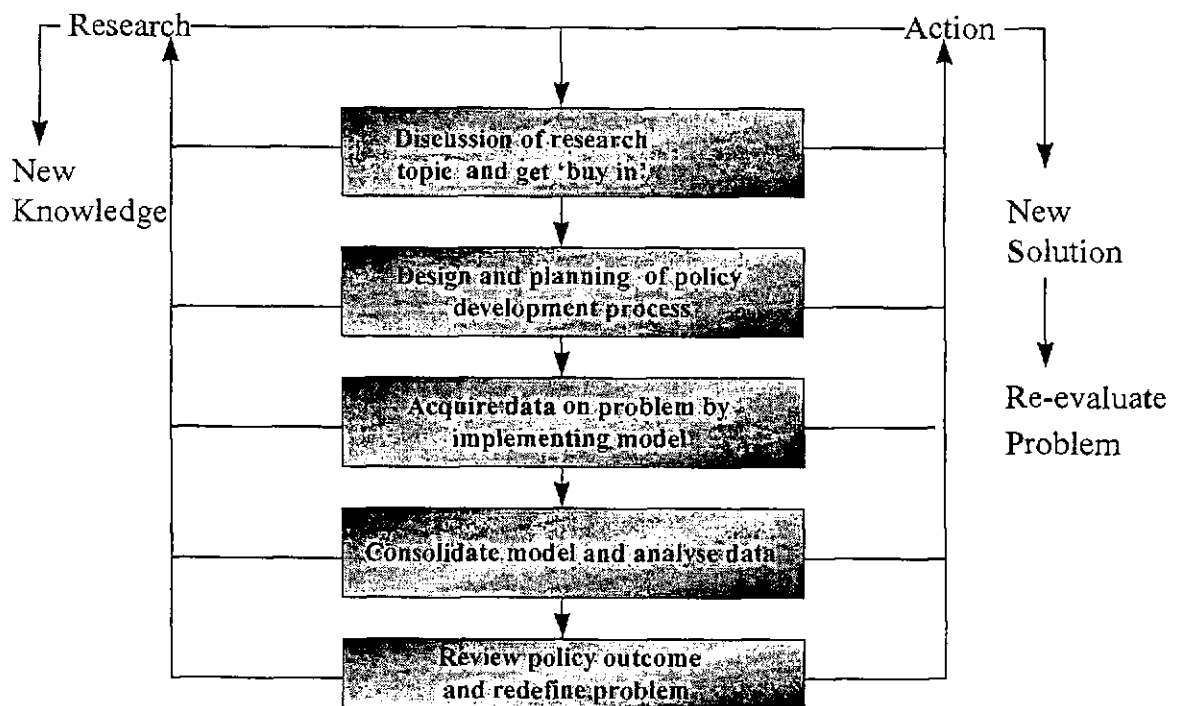
Figure - 4.2 Action research policy development scheme used in developing a BAA policy on aircraft emissions and climate change

4.6 Research tools and techniques

Six other research tools and techniques were adopted in the initiative. These included literature surveys, interviews (group and individual) the business tool scenario planning, some methods drawn from Ethnography, such as participant observation and the creation of a learning diary and some methods drawn from Soft Systems Methodology such as the creation of a 'rich picture' of the positions of the different organisation in the policy community. Table 4.2 offers a detailed explanation, of how these tools were adopted throughout the research process.

Table 4.2 Details of research techniques and data collection.

Research Question	Approach and Data Collection	Analysis
Understanding BAA's current position on the global impacts of aviation and identifying how the business should take the issue forward	A documentary analysis of BAA literature and interviews with key internal stakeholders was employed. Interviews were used to triangulate details obtained from the documentary analysis. Participant observation and participant feedback was recorded as field notes and reflected upon in order to ascertain the level of understanding and the willingness of the company to consider the research problem.	The documents interviews and field notes were analysed and key themes and patterns in the data sought. Data was triangulated to add reliability to results. Results were feedback to GAPE and differences between data sets discussed
Mapping the current work/position taken by the various international/national organisations contributing to this issue. Develop a briefing paper on aircraft emissions and climate change.	A Documentary survey was employed. It recorded the position of the principle organisations in the policy community. Interviews were conducted with some for clarification. This information was used to produce a rich picture of contextual information and formed the basis of discussion with research stakeholders about BAA's position and possible interventions. A briefing paper on organisational positions and on the background to the issue was produced and circulated.	Documents and interviews were analysed. Patterns and themes in the data identified. Differences in data sets, illuminated by triangulation, were recorded, analysed and presented to the research stakeholders through the briefing note and presentations.
Assessing the BAA business implications of the different scenarios to control/cap the growing	27 internal and external experts were interviewed in order to establish a list of future issues and uncertainties which could impact upon BAA in the future. Interview notes were transcribed	Interviews were analysed patterns and themes sought. Focus group notes and outputs were recorded and developed.

emissions	Focus group and workshops held to develop scenarios and BAA mitigation strategies. Participant observation used to record and reflect upon any insights (e.g. the type of language, degree of concern, strength of feeling) as to how BAA approaches the issue throughout the scenario planning process. The scenarios were developed into story lines.	These where then used in presentations and discussion groups within the business. Field notes were analysed for patterns and key themes. This was used by GAPE and the steering group as a source of refection to help position the work successfully in the business.
Developing a decision matrix where by BAA can consider its policy options	Using the outcomes of the SPP a focus group was undertaken to tease out policy options and their ramifications.	Participant observation and the outcomes of the meeting were discussed with collaborators.
Understanding any differences in BAA's level of knowledge and understanding of the issue	Interviews and participant observation and methods from ethnography were used to identify BAA's changing perception of this issue throughout the research process.	Patterns and themes from participant observation were analysed and discussed with collaborators. Conclusions of the company's level of commitment were also discussed.

4.7 Participation of research stakeholders

A large numbers of stakeholders were involved and collaborated, at different levels, throughout the project. Heron (1994) describes the nature of participation in this form of co-operative research as:

'...all those involved in the research are both co-researchers, whose thinking and decision making contribute to generating ideas, designing and managing the project and drawing conclusions from the experience and also co-subjects, participating in the activity being reached."[57]

Collaboration with colleagues was most concentrated at the beginning and end of the research scheme (stages 1 and 5). Two governance groups, the Contract with the Community board (CwtC) and the Business Steering Group (BSG) played a crucial role in supporting and advising the development of the work programme throughout the process.
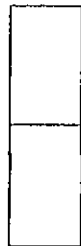
Table 4.3 describes the level of collaboration of different stakeholders in this initiative.

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[57] Heron, J. in Reason, P. (1994) Handbook of Qualitative *Research - Three approaches to participatory inquiry.* Sage London. In: Denzin, N. K and Lincoln, Y. .S (ed)

Table 4.3 Levels of engagement of the different research stakeholders

Category of Collaboration	Who	Level of Participation	Role in Research	Method of input and Feedback
Immediate collaborators	Kathryn Barker (Head of Group Environment) and line manager	Fully participative	Major role in design, review and implementation of research	Weekly feedback
Collaborators	Lynne Meredith (Group Planning Director) and Phil Dunn (Environment Advisor) Alison Liversly (Corporate Strategy Manager)	Major participators	Major role in defining the role of research, the design and review of the policy development model and research outcomes	On average monthly face to face reflective feedback. Email and collective reflection in meetings
Steering Group- Business Sponsors	Lynne Meredith, Mike Toms (Director of Regulation) and Alan Osborne (Director of Risk)	Major participators	Business sponsors for research. Helped define and refine policy model and reflect on the implementation of the model and provide essential business sponsorship and political advice.	Face to face reflective input (6 meetings). Email input and telephone conversations
Research Clients (Contract with the Community Board)	SD board. Chaired by Janis Kong (Managing Director of Gatwick airport). All airports and functional departments represented	Participated	Major client for the research. Input at defined stages of research. Involved in research design and consulted on; research objectives, implementation and output of model.	Face to Face discussions with board (4 agenda items). Email conversations and feedback
External Network	External spokes people (e.g.	Consulted	Informants and external advice on model /	Interviews, face to face discussion

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	Environmental groups, Industry spokespeople and politicians)		reviewing model	and telephone conversations
Forum DProf Network	DProf colleagues	Consulted	Support and advice on research process and being an 'inside' researcher	Face to face meetings, email consultation and telephone conversations
Advice Network	Academic support from Middlesex and content advice Forum for the Future	Consulted	Advice on research process and clarification of DProf process. Forum for the Future advice on sustainability content	Face to face, email and telephone conversations.

=Research Participants

=Research Network

4.8 Feedback cycles

Feedback and review of the policy development initiative in reality was continuous throughout the process. Some review and feedback sessions were formal whilst others were less formal, depending on constraints such as time and in the case of the CwtC board, a sustainable development board, their willingness to be involved in detailed research design and analysis issues. With some research stakeholders the action of reflecting on progress was not always made explicit and was frequently opportunistic in nature e.g. discussion in lifts, car and train journeys and over email. However, with other research stakeholders and collaborators, such as the BSG feedback was formal and more detailed.

4.9 Interventions

Interventions were often fairly subtle in nature and were made as the result of people's comments on the policy model and subject. Interventions included, the method of presenting issues, the positioning of the work, the adoption and testing of different language and analogies used during discussions about the research subject. Other, less subtle, interventions included agreeing or changing policy direction. Once the policy was approved the research stakeholders were able to reflect on the change that the policy would make to organisational activities in order to understand and re-define subsequent business priorities.

4.10 The policy development process - the starting position-

In the early stages of this work I developed the scope of this initiative from a values driven perspective. This included a draft policy development scheme before engaging in discussion with colleagues and individuals across the business. The scheme (figure 4.3) was based on a technical analysis of the role and responsibilities of BAA in the aircraft emissions and climate change debate and included developing an emissions inventory to enable a numerical analysis of the extent of BAA's role in the issue. The model moved onto developing a BAA response, taking on board relevant stakeholder views and the development of far reaching mitigation options or a re-appraisal of BAA's development aspirations.

This approach was based on a strong personal view that development of additional airport capacity is inconsistent with SD, given current technology. I felt that, armed with an emissions inventory, BAA would react to the scale of the figures presented. I envisaged the process to be fairly systemic in nature, the output to be detailed briefing papers and a fairly major impact in terms of a new policy direction or strategic focus for the business. In chapter seven this model is used to demonstrate how my approach to policy development in BAA changed over the process of the work programme.
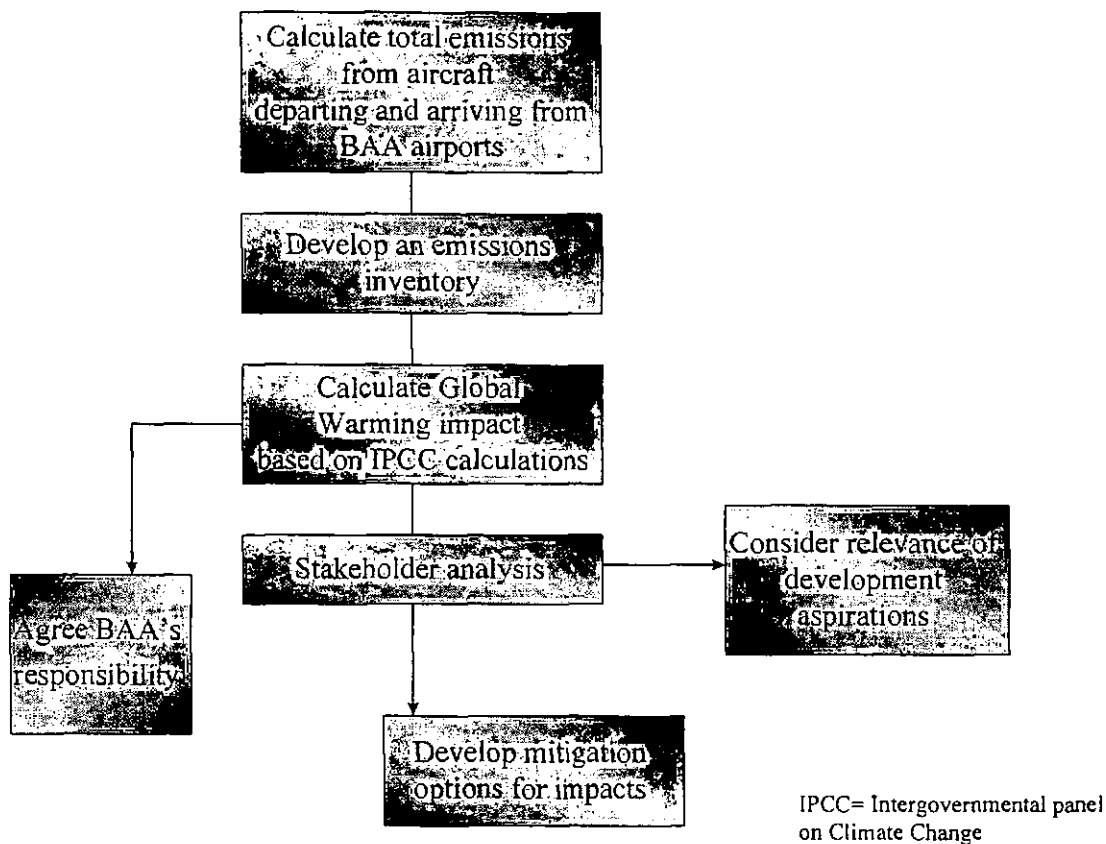
Figure 4.3 The initial policy development model

4.11 Background on scenario planning

Scenario planning (SP) has a major role in this policy initiative. A number of early decisions over the precise method of SP employed had an impact on the outcome of the research and are discussed in some detail below.

SP is a method used to encourage strategic thinking and planning in relation to future uncertainty. It develops different mental models or story lines about the future to test the robustness of company strategies, Ringland (1988) defined scenario planning as;

"strategic planning which relates to the tools and technologies for managing the uncertainties of the future."[58]

In order to develop an understanding of the future risks aircraft emissions and climate change could present BAA a Scenario Planning Process (SPP) was developed. It was particularly appropriate in these circumstances because;

- Scenario planning is familiar to BAA;
- It's a helpful mechanism when thinking about long term business issues and risks and opportunities;
- It's a useful mechanism to consider future uncertainties;
- It encourages creative thinking;
- It provides a mechanism for the involvement of external stakeholders.

The following individuals advised and collaborated with me on the development of the SP methodology;

- Alison Liversly, BAA Corporate Strategy;
- Professor Gareth Price, formally of Shell International, an external consultant;
- George Martin, Brian Pearce and Matthew Gorman from FFF;
- Dr M Everad, The Natural Step;
- Dr Frans Berkhout from the Science and Technology Policy Research Unit (SPRU).

One of the main features of SP is the development of a number of story lines (or scenarios) about the future. Scenarios are described by The World Business Council for SD (WBSD) as;

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[58] Ringland, G. (1998) *Scenario Planning - Managing for the future* Wiley

"Powerful tools for addressing what is fundamentally significant and profoundly unknowable- the future. Unlike forecasts, which impose patterns extrapolated from the past onto the future, scenarios are plausible, pertinent alternative stories that are concerned more with strategic thinking than strategic planning, and more specifically with the quality of thinking. As we enter these alternative stories , we are guided to practice a flexible approach to the future and to alter our mental maps."[59]

4.11.1 Create a vision for the future?

One of the first methodological decisions discussed with the BSG was whether to include the method of 'back- casting' in the scenario development process. FFF advocate the use of 'back-casting' in developing scenarios. I was interested in adopting the method they have pioneered through the Natural Step, (a model of SD supported by FFF), to develop a 'sustainability scenario' . Dr Mark Everad from the Natural Step argued that one of the main advantages of the tool is that it helps build a 'vision' of a sustainable society or business, based on four scientific principals, or system conditions which underpin a sustainable society[60].

I suggested to the BSG that a vision of a sustainable aviation sector, a 'sustainability scenario' could be discussed and created by the business and external stakeholders, using these system conditions. The vision could then be used to create a route map of how to realise the vision, working backwards from the vision towards the present day - thus the term backcasting.

I argued that adopting this approach in conjunction with the standard BAA approach to develop scenarios, to create a ' sustainability scenario' would have numerous advantages. These include;

- demonstrating the scale of the changes necessary for aviation to become more sustainable;

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[59] World Business Council for Sustainable Development (1997) *Exploring sustainable development WBCD global scenarios* World Business Council for Sustainable Development

[60] Natural Steps four system conditions include
1. Substances for the Earth's crust must not systematically increase in the Biosphere
2. Substances produced by society must not systematically increase in nature
3. The physical basis for the productivity and the diversity of nature must not be systematically diminished
4. We must be fair and efficient in meeting basic human needs

- highlighting strategies that could make such changes possible;
- developing a common vision as to what a sustainable sector would look like with stakeholders;
- encouraging the development of common policy options with the airline.

However, the BSG rejected this idea for the following reasons;

1) They did not agree with the Natural Step principals of SD as the model is based on environmental limits. The BSG described this as "only satisfying certain stakeholders views on SD";

2) They did not agree with the principal that one could 'choose' a future from the scenarios developed. Given that the future is, by its very nature uncertain and out of BAA's or anyone else's control, it was argued that it was naive to suggest that BAA should try and work towards one future as opposed to the others.

I was not surprised that the BSG confirmed its resistance to the Natural Steps model of SD. However, 1 was disappointed that the business dismissed the opportunity to understand and appreciate the scale of challenge environmental sustainability posed the aviation sector. 1 felt that this would help bring sustainability 'alive' to the business and demonstrate the scale of the challenge and the opportunity the future may hold for the aviation sector and BAA.

BAA's fatalistic approach to the future was also disheartening. Naturally 1 accepted that the future is not entirely within the companies control and free from uncertainties, however, I felt that BAA would not be able to move forward on key issues of SD unless it had a well defined direction or vision of the type of future the organisation would like to realise and be part of. 1 felt the business was constraining itself with present problems and without a more foreword looking 'out of box' approach such direction setting would be difficult.

4.11.2 Develop BAA scenario's or using pre - developed scenarios

The second methodological issue was to consider the possible use of scenarios that have already been developed by SPRU. These scenarios outlined different future models for the world e.g. globilization, world sustainability, local economies etc, which could easily be amended to suit BAA's purposes. I suggested to the BSG and in discussion with SPRU that there could be a role for these scenarios in this work. However, both SPRU and the BSG confirmed that the overriding principal of this work is that the business should own and trust the scenarios developed. This view point supports the position of the Society for Learning who state;

"there is nothing more boring than someone else's scenario about the future." [61].

Consequently it was agreed that this would be best achieved by allowing BAA and external participants to develop their own scenario.

4.11.3 Agreed scenario methodology

After surveying the literature and numerous discussions with experts the method for the SPP was agreed by the BSG (table 4.3). The process was similar to that process commissioned by British Airways in (1994)[62] and previous exercises in BAA. It was adapted from Swartzs (1992).[63]

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[61] Society for Organisational Learning, (2000) *Four futures for organising and learning the new Economy* Cambridge press

[62] Moyer, K. (1996) *Scenario Planning and British Airways - a cast study* Long Range Planning, 29 February

[63] Shwartz, P. (1992) *Composing a plot for your scenario* Planning Review, May, June

Table 4.4 - Approved scenario planning methodology

Scenario Planning methodology	
Step 1	Identify focal issue or decision
Step 2	Identify key forces in local environment / Identify driving forces through interviews
Step 3	Rank key forces by uncertainty and drivers
Step 4	Workshop to identify scenario logics
Step 5	Flesh out the scenarios
Step 6	Discuss implications through workshop
Step 7	Present implications

4.12 Insider researcher issues

Clearly this research touched on some very sensitive issues for BAA, not least because it questioned the legitimacy of the expanding aviation sector from a sustainability point of view. In addition, it focused on an issue which is very sensitive to the company's clients, the airlines. These sensitivities were further compounded by the fact that I was a new team member, with a background with FFF. Many insider researcher issues were, therefore, presented during the research period. These were proactively addressed throughout the initiative.

Personal ethics and challenging the business: a major dilemma which surfaced through out the research process was dealing with an issue I felt passionate about in the business context and learning to challenge and use language that I was not always comfortable with. This led to many personal conflicts during the research period where I felt I was treading a fine line between remaining true to my own sustainability values and beliefs and protecting the interests of BAA in the short term. Being seen to protect the business interests was necessary if I was to gain and maintain the trust of the business, however, this was not always easy to reconcile with my desire to see the business develop a more radical approach to these issues. Managing this dynamic

between values and business interests was the major challenge of this work and involved developing and communicating the business case for BAA action rather than relying totally on a values led discussion. A strategy I adopted to overcome some of these issues was to take a balanced approach to challenging the business. This involved challenging the business to go further than the business felt comfortable with but not far enough to lose the respect of colleagues and become ineffectual. In this case becoming ineffectual would mean being regarded as running an alternative agenda other than protecting BAA' s interests.

Dealing with stakeholders: representing stakeholder views internally often presented ethical issues as over or under reporting certain views consciously or unconsciously could influence the outcome of the policy development process. Conscious that this bias could affect the way I represented stakeholder views I checked the representation of such views with collaborators as I wanted to ensure that views were represented fairly in order to maintain a trust relationship with the company.

Ability to criticise my own performance: objective criticism of my own work also created ethical issues and tension. It was difficult to get feedback from certain stakeholders and openly critiquing myself and the policy development process, on occasions, proved difficult as it was not always appropriate. The close working relationship I developed with collaborators, such as Kathryn Barker and Lynne Meredith, helped with this reflective process.

Dealing with data that represents conflicting interests : the research was politically charged and drew on a whole range of information sources, some powerful, some weak, who all had different stakes and opinions on the debate surrounding aircraft emissions and climate change. This meant that the data collected represented these conflicting interests e.g. data from an airline industry body and an environmental campaign group. These conflicts exhibited themselves at both a philosophical level, the approach to the problem, and in the detail of the problem. In addition, there was scope for my interpretation of these different messages to introduce further bias. Again the collaboration of individuals such as Phil Dunn

(Technical Environment Advisor) helped ensure that these conflicting interests were dealt with appropriately.

Dealing with power relationships: as a new and not very senior member of GAPE and the SD policy making team power relationships impacted upon the way in which the work programme was designed and achieved. In addition, as BAA is not a youthful company, my age - in my mid twenties- also had an impact upon this initiative. This lack of 'institutional' power had both advantages and disadvantages. Obviously it meant that 1 had no power from status within the company. This meant that I had to be cautious about how my views were represented and when appropriate I sought collaborators to support ideas and points of view, or to present work. However, as the work progressed this lack of formal power proved fairly helpful, as I found 1 had acquired some influence and trust of colleagues and my relative youth allowed me to present what was perceived as a more 'youthful view point' in a fresh and challenging manner.

5 Project Activity

This section of the project summary presents an evaluative description of the policy development process and the decisions and outcomes that occurred at each stage of the policy development scheme (figure 4.2). In particular, the successes and failures of the policy development and change management process are highlighted.

5.1 Research stage 1: Gaining the support of the business

Stage one of the research scheme was designed to gain the support and 'buy in' of the business for this initiative. Therefore, a series of information and opinion seeking meetings and discussions were set up between Kathryn Barker, myself and high level individuals from the business. In addition to gaining the support of senior managers, the meetings also explored the boundaries and scope of the initiative. This approach was the necessary first stage to get the business to engage with the issue at an appropriate level.

5.1.1 Revelations - positioning research objectives

The key outcomes of these scoping meetings are listed and reflected upon below;

- **Environmental limits:** preliminary discussion revealed an absolute rejection of the principal of 'environmental limits' to development. Statements such as "*If you spend time on this issue you must not consider demand management*" and "*Looking at setting emissions caps will not be helpful*" were frequent, indicating how sensitive the business is to deliberations about limiting its physical growth.

This position was not surprising given that BAA's current business objective requires the development of airport capacity in the South East. Furthermore, the model of SD adopted by the company also supported the rejection of the principal of 'environmental limits'; as it accepts trade-off's between the social, economic and environmental impacts of development.

As Porritt (2000) stated *"a company will never accept it if you challenge them on the very foundation of their business"*[64]. However I found the company's rejection of this idea of environmental limits, particularly in the context of climate change, unrealistic and frustrating. Given the scale of the impact of aircraft emissions I felt that the business should recognise that this could not be considered sustainable growth. This view is supported by organisations such as the Royal Commission of Environmental Protection (RCEP) who state;

"an unquestioning attitude towards future growth in air travel and an acceptance that the projected demand for additional facilities and services must be met, are incompatible with the aim of sustainable development."[65]

- **Traditionally an airline issue:** *"we have to be very careful that we are not admitting responsibility for airlines emissions"* was another common theme in discussions. The business clearly did not want to admit ownership or responsibility for aircraft emissions or progress a strategy that differed markedly from, and therefore acted to alarm, the airlines. As a result, it seemed advisable to position the work as a method to better understand BAA's role in the debate on aircraft emissions and climate change rather than developing a leadership position on the issue, which went beyond the industries present position.

Clearly it would not be in BAA interests to take responsibility for these emissions directly at the exclusion of the airlines. However, Kathryn Barker and 1 discussed with the business four important caveats to this argument. These points, we suggested, meant that BAA should take this issue seriously and develop a proactive policy position to manage the issue;

◊ As public opinion rarely rationally identify the boundaries of responsibility the public may well perceive emissions from aircraft an issue that both the airports and the airlines should manage. This is the case with the air quality impacts of the airlines around Gatwick and Heathrow. Indeed, this argument gained

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[64] Porritt, J. (2000) *pers comm*
[65] Royal Commission for Environment Protection (1994) *Transport and the Environment (the 18th report)* The Stationary Office

weight in July 2001 when climate change protesters stormed and barricaded themselves in the BAA board room with the banner 'BAA, Broken Atmosphere Authority' in protest over the climatic impact of the expanding aviation sector;

◊ Emissions from aircraft are a growing and important secondary impact of BAA's operation and as such warrant some form of responsible management;

◊ Avoiding responsibility has traditionally been BAA's starting position with many of the sustainability issues that the business now actively manages, such as waste and air quality. We argued that the 'do nothing' option would leave BAA tied to airline strategies, who do not have a good reputation in managing these issues. The risk in this approach is that the airlines will not manage this issue with the long term interests of the aviation sector in mind;

◊ Finally, where would the airlines go? BAA often steps out of line with the airlines on financial and safety matters, so why would going beyond the airline expectations have any real impact on BAA's business? As one of the alumni from the FFF scholarship said, *"would the airlines really abandon Heathrow if BAA said they should take the threat of climate change more seriously- where would they go to?"* Although this is a simplistic analysis of the situation with regards to the complex airport, airline and regulator relationships, I argued that BAA should be less concerned about putting an extra 'environmental burden' on the airlines.

• **Complexity and other priorities:** *"BAA is in no real position to influence this issue"*. Managers often cited the complexity of international negotiations and vested interests of nation states as a barrier to BAA exerting any influence on this subject. For example, the Strategy and Compliance Director said; " *this is such a global issue that you feel powerless, but you are right this is a critical issue going forward"*. Another manager extended this thinking, arguing that, given BAA's inability to influence the policy agenda on aircraft emissions, the business should

weight in July 2001 when climate change protesters stormed and barricaded themselves in the BAA board room with the banner 'BAA, Broken Atmosphere Authority' in protest over the climatic impact of the expanding aviation sector;

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◊ Finally, where would the airlines go? BAA often steps out of line with the airlines on financial and safety matters, so why would going beyond the airline expectations have any real impact on BAA's business? As one of the alumni from the FFF scholarship said, "*would the airlines really abandon Heathrow if BAA said they should take the threat of climate change more seriously- where would they go to?*" Although this is a simplistic analysis of the situation with regards to the complex airport, airline and regulator relationships, I argued that BAA should be less concerned about putting an extra 'environmental burden' on the airlines.

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focus its efforts on managing issues which have local impacts, such as noise and air quality, where the business does have more.influence.

This position was frustrating. I argued that the long term business risks associated with this issue were too great to simply ignore or describe as too complex. I felt that this position underplayed the value of 'leadership' and demonstrated a poverty of ambition within the organisation to contribute to a more sustainable and vibrant sector. This position also indicated that developing the case for leadership and influencing the sector was likely to be a key theme in this initiative.

- **Pressure from Forum for the Future to address the issue:** There was a general feeling amongst the business that the company's current statements on aircraft emissions and climate change would not withstand, indefinitely, the persistent probing of FFF. Developing a company position on this issue was, therefore, felt to be a positive step in responding to FFF's concerns.

5.1.2 External opinion

External opinion from relevant organisations was canvassed including; Hugh Somerville (Head of Environment British Airways) Mike Rossell (Environment Directorate, European Commission), Tim Johnston (the anti- aviation campaign group Aviation Environment Federation) Matthew Gorman (FFF). The results of the consultation with each organisation is provided in table 5.1

Table 5.1 External opinions on development of BAA policy position on aircraft emissions and climate change debate

Organisation	Opinion
British Airways (BA)	In principal supportive of work but cautious of BAA getting involved with the specific aircraft emissions issue. Could not see any value in BAA involvement with policy options and suggested that this should not be a priority for BAA, rather it should focus on how this issue could impact on BAA's operation
European Commission (EC)	Unsure of added value BAA could bring to the policy debate. Suggested that BAA's role in International Airports Committee (ACI) would be one mechanism to increase its involvement with this issue
Airfields Environment Federation (AEF) - an environmental campaign group	Supportive but cynical of BAA's involvement. He suggested that it was unlikely that BAA would re-consider its core strategy.
Forum for the Future (FFF)	Extremely supportive. Felt that BAA could add value to debate. Supportive of the systematic 'carbon management' approach. Suggested that the main business case for this work was 'reputational'.

FFF were the most enthusiastic supporters of the work, offering to write to BAA's Chief Executive Officer (CEO) to offer their support to the initiative. The other external organisations approached, who are more closely involved in the complex international negotiations to control aircraft emissions, were less supportive and less enthusiastic about the value BAA could bring to the debate.

On reflection and following internal discussion on the different reactions of external stakeholders I concluded that FFF, who are not experts in aviation, Kathryn Barker and myself were looking at this issue from a political and strategic perspective which

fundamentally challenged the 'status quo'. We wanted to see a 'step change' in performance and attitudes. The other organisations, who engage daily in this policy area, but in a technical capacity, took a narrower, institutional view of the issue, which inevitably focused more on 'incremental improvements'. This gave me another strong signal that more radical, solution orientated style of thinking would find little support within the business and the sector at large.

In order to position this work to get maximum support of the business, Kathryn Barker and I drew the following conclusions from the consultative meetings,

a) Focus on developing a business case, identifying business risks and opportunities to mitigate the climate change impact of aircraft emissions rather than developing a leadership position for BAA on this issue;

b) Do not develop a technical analysis of the problem (section 4.10);

c) Ensure that the ownership of the issue rests with the airlines. This work should look at how BAA can develop partnership approaches with the airlines;

d) FFF's opinions on these issues are highly significant and trusted by the business, they should, therefore, have a role in the process;

e) Further communication is needed to justly BAA's involvement in this issue with external policy communities and networks;

f) More radical thinking is likely to be resisted by BAA and the sector.

5.2 Research stage 2: The policy development model

Based on this initial opinion canvassing the following policy development model was constructed, in consultation with Kathryn Barker and approved by the Director of Strategy and Compliance (figure 5.1). The model focused on the assessment of the business risks of aircraft emissions and climate change and on the development of mitigation options with the airlines in order to try and influence the options developing at the international level. The models outcome was intended to be a detailed BAA policy position and a number of mitigation options which could be developed further by BAA with the support of the airlines.

The model deliberately adopted business tools such as scenario planning, stakeholder analysis and risk workshops, which are all familiar to BAA, in order to increase the understanding of the approach adopted. Crucially, this also acted to ensure that the work programme appeared integrated with BAA's main stream business planning processes. Additional consultation on this model with senior managers was undertaken.

RS= Research Stakeholders
C= Collaborators
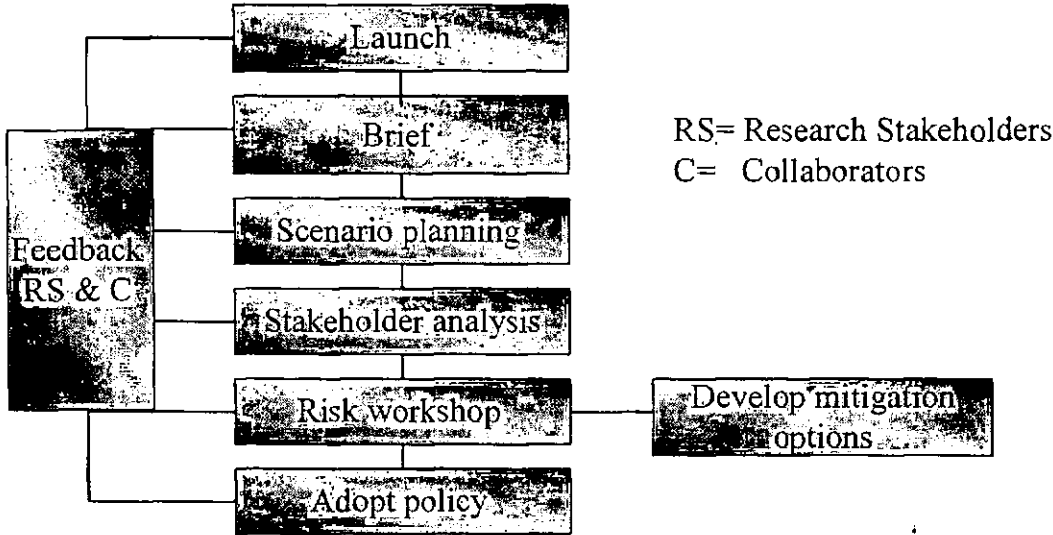
Figure 5.1 The policy development model agreed by research stakeholders

Each level of the model had specific goals which are outlined below;

1) Launch- staff communication to raise awareness of the issue and work programme;

2) Brief- the development of an up to date briefing paper which contains information on the issue, mitigation options and stakeholder positions;

3) Scenario planning - adopted to identify the business risks and opportunities;

4) Stakeholder analysis - designed to systematically record the opinions of key stakeholders;

5) Risk workshop - develop a decision matrix on the different policy options for discussion internally;

6) Adopt policy- gain approval for policy and mitigation options.

Comments, thoughts and ideas form the research stakeholders and collaborators on the initiative were continuously feedback into the work programme, as described by sections 4.7 and 5.3.5

5.3 Research stage 3: Implementation of policy model

Stage three of the research process was the implementation of the policy development model. The work was helpfully politicised by the publication of two Government policy consultations (UK Carbon Emissions Trading Scheme[66] and The Future of Aviation consultation[67]) that considered, among other issues, the issue of climate change and aircraft emissions in some detail. The model was not strictly implemented as different policy development mechanisms became more and less appropriate as the process developed. Flexibility, including the ability to take up opportunities proved key to progressing this initiative. Sections 5.3.1- 5.3.5 offer a detailed narrative evaluation of each stage of the model.

5.3.1 Launch and briefing paper

The launch consisted of an article in 'Management Update', BAA's internal management magazine, which spelt out the role and desired outcomes of the initiative (Appendix 1.1). The article served as a useful synopsis of the work programme to send to key internal and external people. However, it proved less helpful as a mechanism to engage individuals internally as it was not received with much interest.

The briefing paper was written shortly after the project launch (Appendix 1.2). It was based on an extensive literature survey of the issues surrounding aircraft emissions and climate change including; the position of various stakeholders, mitigation options

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[66] DETR (2000) *A Greenhouse Gas Emissions Trading Scheme for the United Kingdom* The Stationary Office
[67] DETR (2000) *The Future of Aviation consultation* The Stationary Office

and their potential impact upon BAA and the status of the international policy debate. Interviews with colleagues from the external policy community supported this work by clarifying messages. The draft briefing paper was circulated to collaborators. There was some criticism, particularly from Kathryn Barker, that the draft was too technical and academic. Once these comments were incorporated the re-draft was circulated to the main research stakeholders. However, not unlike the launch article, the paper received little interest.

The disappointing response to the briefing paper and launch indicated that despite extensive involvement of people across the business in Stage 1 of the research scheme (section 5.1) the initiative had not established an internal 'community of interest'. Conversations with research stakeholders on how to engage the business more successfully suggested that the work would benefit from a more political approach i.e. - the development of a business case, more interpretation with key political messages highlighted. I also concluded that lengthy, paper based communication was neither a helpful nor commonly used mechanism for communicating issues within the business.

During the development of the brief, I became aware that the international negotiations to develop a solution to the climate change impact of aviation had developed considerably over a number of months. The industry had began to shift towards Emissions Trading as a workable option. This development meant that I was less keen to pursue the development of a local BAA designed mitigation option as this could detract from developments at the European and ICAO level. Clearly a proportionate industry led response would be more effective than a local BAA initiative. As a result the work re-focused on the internal understanding of the issues and BAA's views on the possible policy options designed to control emissions and which, if any, the company should promote.

5.3.1.2 Setting up the Business Steering Group
Reflecting on the low level of interest created by the project launch and briefing it was clear that I needed another mechanism to support and advise me on the policy

development process, other than the CwtC board and colleagues / collaborators from GAPE . As a result Kathryn Barker and I decided to set up a Business Steering Group (BSG), to offer me advice on a more regular and informal basis than the CwtC board. The membership of this senior group included the Director of Risk, Director of Strategy and the Director of Planning and the Environment, who collectively offered me a wide range of views and support from across the business. The group's terms of reference were to challenge my work and counsel me on how best to progress my objectives through the business.

5.3.2 Scenario planning

The next stage of the policy model was the scenario planning process (SPP) which formed a significant element of this policy development initiative. The exercise focused on the following question; *Aircraft emissions and climate change; what does the future look like and what does it mean to airports and their development?* The time frame adopted for the scenarios was thirty years i.e. 2030, the same time frame as the government adopted for its Future of Air Transport consultation

The SPP began in September 2000 and finished in March 2001. I led the process with input principally from the BSG, who approved the final methodology (section 4.11.3.)

Understanding the driving forces for change and the future uncertainties

The SP interviews had two objectives, firstly to identify the drivers for change and the future uncertainties associated with climate change and aviation, and secondly to engage with the external policy community. I completed a total of twenty six interviews. External interviewees included individuals from the banking, airline and manufacturing industries, economists, leading environmentalists and politicians. There were three group interviews (Appendix.2.2). Once complete, the main driving forces for change and key uncertainties were identified through analysis of the interview transcriptions. The results were then developed into a list of 'thought prompters' which were used in the SP workshop to help derive the scenarios (Appendix 2.5). The interviews were successful at increasing my knowledge and understanding of the issues and how they affected different stakeholders but it proved

more difficult to reflect the high calibre of discussion back into BAA (see section 5.3.5.and 4.1 for one successful mechanism).

Scenario Planning half day workshop

The SP workshop took place at the end of January 2001. Participants included key internal decision makers and twelve external participants, who were selected because they engaged in high quality discussion at the interview stage. The workshops objectives were two fold; to engage senior BAA managers and external representatives from industry, government and environmental groups in this initiative and to develop internally consistent future story lines or scenarios, based on the output of the interviews. Prior to the workshop participants were sent the list of 'thought prompters'. A team of BAA internal facilitators were engaged and briefed to run the session.

The process started with the following three presentations from external participants;

- The objectives of the scenario planning exercise (Appendix 2.6.1)
- The physical impacts of climate change - Dr Richenda Connell from the UK Climate Impact Programme (Appendix 2.6.2)
- The possible regulatory response - Dr Tim Denne from OXERA Environmental, an environmental economics consultancy (Appendix 2.6.3).

Breakout groups were asked to develop scenarios for the 2030 time-frame using the 'thought promoters' as a guide and/ or discussion tool. Each group were asked to develop a number of scenarios with three different levels; global, aviation and airport. They were also asked to express the scenarios in terms of key indicators such as growth in passenger numbers or the style and level of regulation.

In total eight scenarios were developed during the session. In addition, the workshop reached a consensus on some of the main driving factors for change in the future with regard to air travel and emissions. These were growth in travel: technological change:

and regulatory response to climate change issues. Figure 5.2 illustrates the main conceptual framework for the scenarios developed in the workshop.
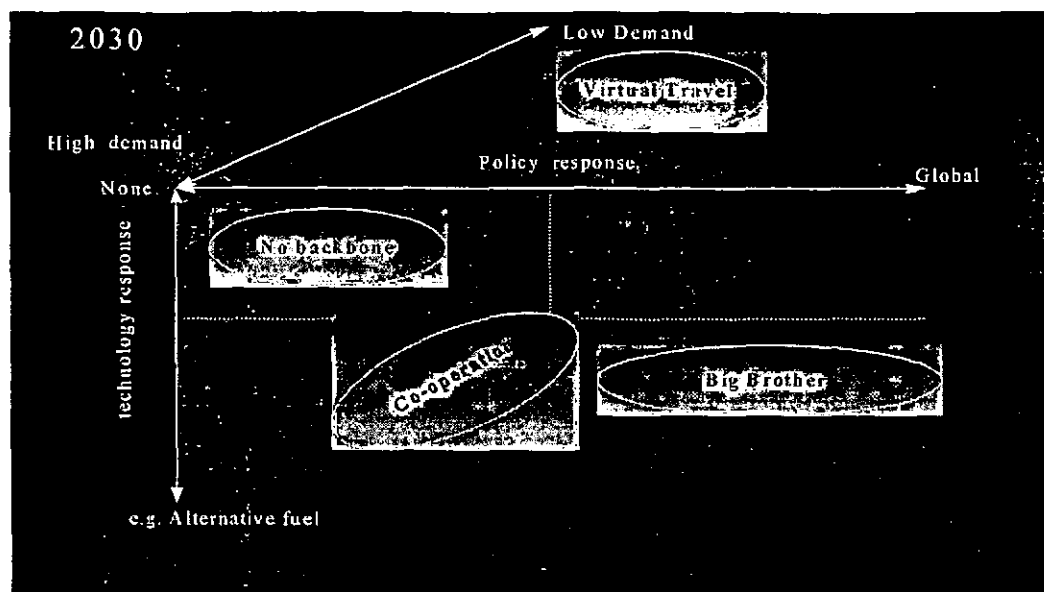
Figure 5.2 Conceptual Model of Scenarios

Some key themes came out of discussion in the feedback session. These subsequently acted as powerful messages for BAA executives and included;

1) A broad consensus that climate change was a political 'reality'. None of the scenarios developed refuted or denied the prospect of climate change and the existence of a political reactions to the issue;

2) All the scenarios suggested that the future would be impacted by climate change to some degree;

3) Each scenario highlighted an element of business risk and therefore required/ suggested a business response.

Fleshing out the scenarios

Of the seven scenarios developed during the workshop it was clear that these could be easily integrated into four complete scenarios, which Price (2001) considered to be an ideal number[68]. Once the scenarios were integrated and developed further the BSG and FFF were consulted and internal inconsistencies were discussed and dealt with. The

final scenarios were described in pictorial form and accompanied by a basic bullet point description. For more detailed work a narrative description was developed (Appendix 2.8)

At this stage I suggested, to the BSG that the scenarios could be published in a discussion document or presented as an internet discussion, as a method for BAA to use its influence to engage the sector in this issue. This was rejected by the BSG as too high profile. This was not surprising but signified, again, that the business did not feel comfortable in developing a more public or leadership position in this area.

Implication workshop

In late February 2001, an implication workshop was held and attended by key internal stakeholders including the members of the BSG. The objective of this workshop was to look at each scenario and identify the risk, opportunities and impacts it posed BAA and consider different BAA mitigation strategies for each of the scenarios. Table 5.2 contains an example of the summarised feedback for one of the scenarios. The full feedback can be found in Appendix 2.9.

Table 5.2 Summarised feedback for Co-operation scenario

Scenario	Impacts	Mitigation strategy
Co-operation	There is a risk of engaging and a risk of not engaging - it is heavily dependent on what the USA do and whether the airlines 'play-ball'	• Develop common objectives and priorities • Develop a SD sectoral strategy • Develop an influencing strategy

The workshop resulted in a shared understanding amongst participants of the common themes, which cut across all of the scenarios (i.e. common opportunities,

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[68] Price, G. (2001) *Pers comm*

risks and mitigation options). The common themes provided an agenda of issues that needed to be addressed at the next level stage of this initiative (Table 5.3).

The business risks identified fell into two clear categories. Firstly, the risk to the reputation of BAA that the aviation sector fails to meet its climate change responsibilities and secondly the business risks of reduced demand, increased costs, limits to growth and draconian regulation. Of particular interest and significance was the fact that participants agreed that a non- regulation scenario was not necessarily the ideal scenario for the business as this would provide an unstable operating environment.

Table 5.3 Common themes from the scenario planning process

a) Each scenario suggested a 'limit' to growth;

b) Impact of aircraft emissions on BAA is tied to how the airlines respond;

c) The possible role of partnerships with airlines in developing common objectives on sustainability issues;

d) How should BAA manage the dilemma between the short term needs with long term sustainability issues?

e) The business needs to think about the relative advantages of diversification;

f) The need for the economic regulator to be 'on board' with this thinking in order to allow the business to develop its thinking and practical action in this area;

g) The wisdom of BAA's volume based business plan;

h) No regulation will not benefit the business in the long term;

i) Level of response BAA should make to noise, air quality and climate change considering these are traded- off.

A major theme of discussion was the role of partnerships in SD. Partnerships, co-operation and strategic alliances are cited by many SD advocates as a mechanism of delivering sustainable development. For example, Elkington (1997) claims;

*" to achieve outstanding triple bottom line performance [sustainability performance]
new kinds of economic, social and environmental partnerships are needed. Long
standing enemies must shift from mutual subversion to new forms of symbiosis. "*[69]

I was, therefore, very interested to see how BAA would respond to the co-operation
scenario, which was described by one individual as 'Utopia'- where companies co-
operate around the world to cut emissions. I was startled and disappointed at how
pessimistic participants were on the ability of the sector to work in partnerships. The
group demonstrated a high degree of mistrust of the airlines and suggested that
reaching consensus between companies originating from different trade- block is also
very difficult. Participants suggested that airlines would play 'dirty tricks' by
breaking partnership agreements whilst publicly embarking on a strategy of co-
operation. Participants cited recent examples of the sectors complete failure to act in
co-operation such as the recent disagreement between the US and European airlines/
airports on the phase out of Chapter two airlines (noisy aircraft) in the developed
world. This issue only narrowly avoided causing a trade war between the EU and the
US.

Such mistrust made me question my allegiance to the views of Elkington and others in
the SD community of the ability of partnerships to deliver sustainability performance
improvements and more sustainable forms of wealth creation. However, after some
consideration and discussion with FFF I feel that given the right operating conditions,
a clear business case, leadership and entrepreneurial thinking, co-operation could reap
dividends. However, clearly the present levels of mistrust, and the mind-sets which
dominate the sector as well as the unstable operating environment of the airlines,
seems not conducive to the building of alliances. I concluded that future partnerships
in this sector will, therefore, have to be very different in approach and involve
different types of companies than previous attempts have employed.

Outcomes and reflection on the scenario planning process
In summary, the scenario planning process resulted in a consensus amongst senior
managers that the climate change affects of aircraft emissions would impact upon

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[69] Elkington, J. (1997) *Cannibals with folks, the triple bottom line of the 21st Century* Capston.

aviation and therefore BAA in some form in the future. As a result there was consensus that this issue warranted some form of action or management within the company. In addition, the identification of common mitigation options across all four scenarios allowed the business to focus on practical and policy steps it could take to minimise these risks.

The main advantages of the SPP in this initiative included;

- it proved an excellent way of engaging the business and the external policy community in a complex subject;
- the process was successful in 'flushing' out the business risks and illustrating them in a way that individuals could identify with;
- the 'bottom up approach' adopted ensured that the scenarios were owned, understood and respected by the participants;
- the time frame of 30 years also allowed participants to be fairly creative with their ideas and encouraged participants to share views openly.

However, towards the end of the SPP a tension emerged around how the process should develop. Some participants wanted to discuss the types of future BAA **should** try and realise, whilst other participants felt that, because the future is beyond BAA's control or influence, the process should focus on strengthening BAA's response to the whole range of different futures, regardless of which futures the company finds most attractive. I argued that the business could legitimately do both e.g. plan for some of the less desirable trends to emerge but also proactively develop strategies that will influence the direction of the industry towards a more desirable future. However, this view point was rejected by the majority of the group, and the participants chose to focus on how best to manage the risks to the business across each of the scenarios.

This had implications for the rest of the process. The language used and mind set applied during the SPP was not, for example, easily transformed into more visionary or forward looking thinking. In addition, the assumption used in the SPP that the future is out of BAA's control, did little to reinforce the need for more visionary and

forward thinking ideas. These two factors, set against the fact that individuals tend to assume that the future will resemble the past, did not help facilitate the development of a more visionary or forward thinking outputs when the initiative moved onto discuss what direction or vision the business could adopt in relation to aircraft emissions and climate change[70].

5.3.3 The UK Emissions Trading and the Future of Aviation consultations

As mentioned, during the research process the government published two policy consultations. After an initial assessment it was concluded that the potential impacts of the UK Emissions Trading Scheme on BAA was on the ability and additional cost of supplying BAA's growing airport operation with energy. The Future of Aviation consultation raised a number of strategic issues relating to airport expansion. Importantly, over 20% of the questions posed in the Future of Aviation consultation related directly to global and or local aircraft emissions and how best these emissions should be controlled.

This gave Kathryn Barker and I the opportunity to illustrate how fundamental the issues of emissions were becoming to the future development of the business. GAPE were involved in both consultation responses. I led BAA's response to the Emissions Trading consultation and Kathryn Barker led on the Environment section of the Future of Aviation consultation, with the support of myself and other colleagues (Appendix 3.3).

Identifying the links between the two consultations, I opportunistically wrote a discussion paper on the interactions between the two areas of policy development and distributed it to key players (Appendix 3.1). As a result I was asked to field all the questions on aircraft emissions trading in both papers. With this remit I was able to commission consultants to undertake a piece of work on the precise nature of the impacts and opportunities for BAA of aircraft emissions trading. This work helped inform the business position on emissions trading. In addition, I subsequently

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[70] Haberberg, A. and Rieple, A. (2001) *The Strategic Management of Organisations* Financial Times and Prentice Hall

prepared a paper on BAA's position on aircraft emissions trading for British Airways (Appendix 3.4).

I also worked with Kathryn Barker to develop the key messages to be included with regard to emissions on the Future of Aviation consultation. This included stating that aviation emissions should be included in the Kyoto Protocol. However, this did not feature particularly visibly in the companies response.

5.3.4 Risk workshop

The risk workshop was the next stage of the initiative. After discussion with the BSG it was decided not to produce a separate stakeholder analysis, as described by the policy development model, as they felt this work was adequately integrated into the SPP and briefing material.

The objective of this session was to consider the business risks and opportunities of different policy options and mitigation strategies, derived from the SPP, in order to produce a matrix of evaluated options. A presentation on the outcomes of the scenario planning workshop and feedback from the BSG and the CwtC board was presented (Appendix 5.1). Policy options and mitigation strategies included do nothing, supporting different economic instruments e.g. taxes, emissions trading and concentrating on different emissions/ pollutants - noise, climate change and air quality, in influencing aircraft engine and air frame design. In discussion each option was considered in detail and a policy risk matrix completed (Appendix 5.2).

The workshop participants concluded that the only option, at the present time, was to demand that airlines and engine manufacturers work on delivering emission reductions in the three areas of noise, air quality and emissions. With regard to economic instruments the group advised that BAA should support the inclusion of aircraft emissions fully into the Kyoto mechanism and support either an emission charge or an emissions trading regime, under certain specified conditions.

In this session I tried to move the group discussion from business risks and focus the session on possible business opportunities. However, the 'inevitability' of the company having its growth controlled in the future dominated discussion. This was not an easy issue for the group to discuss. Some participants felt that this workshop should, pragmatically, only focus on the short term, others believed that this was a " *crucial issue that we can not ignore*". In contrast another participant concluded that curbing the growth of aviation *'should not be BAA's decision but should be the Government' s and society's'*. Others felt that talking about this issue "*was nothing short of hereticism!*" I was delighted that these BAA managers were grappling with this issue, however difficult, as 1 felt this was the crux of the sustainability issue facing BAA. By discussing this issue I felt that the process had helped BAA think more long term and consider the true implications that climate change could have for the business if it is not managed appropriately.

However, as the facilitator of the session 1 felt it best to put these broader issues to one side and focus on the issue in hand. I had taken the issue of growth as far as possible, within the context of my work, and considering the political nature of the subject, I needed to pass this issue onto someone more senior to deliberate and discuss. I felt that deliberations of this kind, led by me, would not be taken seriously by the Executive, unless I was given a specific remit to consider this issue in detail.

To take forward these issues the workshop group recommended that I developed a board paper which covered;

- the outcomes of the scenario planning process;
- made some recommendations on how any outstanding issues, such as issues surrounding growth, should be managed;
- develop a proactive BAA policy position on aircraft emissions and climate change.

5.3.5 Formal feedback mechanisms- presenting to the Contract with the Community board

Although feedback to research stakeholders was continuous throughout the policy development initiative the CwtC board proved the most useful and interesting, mechanism with which to seek feedback from key decision makers.

In December 2000 I developed a presentation, in collaboration with Kathryn Barker, on the initial brief, stakeholder analysis and scenario planning interviews. The presentation had three key features namely; stakeholder positions, linking this working with key political developments and key quotes from the opinion former interviews (Appendix 4.1). Unfortunately the meeting over ran and my presentation was 'bumped' off the agenda. I decided to email the presentation to each individual board members. The response was extremely positive and demonstrated that the business saw the value in discussing the issue at a high level. The chair of the board wrote in response;

"it is a pity we did not hear this as we need to hear this."

The Strategy and Compliance Director stated;

"I recommend that our stance is to work hard in the debate on the development of a viable and workable emissions trading system".

This was a change from a previous conversations where he was pessimistic about the role BAA could play in this debate and suggested that BAA should prioritize its influence into managing air quality and noise issues more closely.

I finally delivered a presentation to the CwtC board, in February 2001, on the SPP and workshop. This included a number of slides summarising the nature of the issue, stakeholder positions, quotes from key opinion formers, the scenarios developed and next steps of the research (Appendix 4.2). The timing of the presentation was helpful as BAA's response to the Government's consultation on the Future of Air Transport was under discussion and I was able to link this work back to this major policy

review. The boards reaction was overwhelmingly positive, they gave the work a clear endorsement stating that this was a 'crucial work stream'. It was clear from their level of engagement that the work had become more political in nature and more strategic than I had envisaged, after the first round of consultation in stage one of the policy development scheme (section 5.1).

The conversation after the presentation was mostly concerned with which scenario offered 'most growth'. They accepted that all of these scenarios suggested that physical growth would be more difficult in the future. However, the board did move onto discuss the fact that physical growth is not the only way to develop the business, with one Director suggesting that there are *alternative forms of value creation*. This was the first time I had heard anyone in the business reflect on the business' ability to grow and suggest that the business should consider alternative growth models.

5.4 Research stage 4: Consolidation of the policy development

At this stage of the research I consolidated the findings of the work to date and developed;

- a business case describing why BAA should develop a policy position on aircraft emissions and climate change;
- a series of recommendations from the scenario planning process;
- a policy on aircraft emissions and climate change.

The deadline for the completed work was May/June 2001 in order to allow the policy position to feature in the 2000/2001 company annual accounts and sustainability report.

5.4.1 The Business case

Drawing heavily on the outcomes of both the scenario planning exercise and the risk workshop a business case for why BAA should develop a policy position based on aircraft emissions and climate change was developed (Appendix 6.1). The business case asked for the support of the CwtC board for two further papers; a policy position

and a paper on the outcomes of the SPP. The paper on the outcomes of the scenario planning exercise included actions to be taken forward by different areas of the business to address the outstanding issues explored during the SPP i.e. growth and relationship with regulator.

5.4.2 The policy position

The following principles, established from the outcomes of the SPP and risk workshop, were integrated into the policy position:

- There was no support to influence manufacturers to reduce climate change emissions at the expense of increasing noise impacts and air quality emissions;
- There was no support for a tax on aviation fuel but there was an agreement that emissions trading and a European tax were viable alternatives given certain conditions;
- There was support for the principal that aircraft emissions should be <u>fully</u> covered by the Kyoto Protocol, thereby reducing the risk of aviation being singled out for special measures;
- There was support for the business to sign up to use its influence to develop mechanisms to control this issue with business partners and the government.

In addition to these key messages the policy contained;

- a BAA commitment to try and influence the industry to reduce its climate change emissions with commitments to action;
- a long term vision that aviation would seek an alternative fuel or become climate neutral;
- a pledge that the industry should sign up to the Kyoto Protocol (including the Kyoto reduction targets);
- and a set of criteria which describe the type of economic instruments the business would support.

The first draft of this policy is presented in Appendix 6.2.

Kathryn Barker and the BSG reviewed the policy and indicated that it was challenging. Despite this feedback I took the paper to the CwtC board in its original form as a deliberate negotiating tactic. I wanted the board to edit the policy, if they felt it necessary, rather than present them with something weak and non-challenging. This would provide myself and Kathryn Barker the opportunity to lobby the board in order to maintain the more radical elements of the policy and, if we were not successful, to understand the board's rationale in rejecting elements of the policy position.

5.5 Research stage 5 : Seeking approval

The last stage in the policy development model was seeking approval for the policy position. There were three stages to achieving this;

a) consulting business partners and main stakeholders;

b) gaining the approval of the CwtC Board;

c) gaining the approval of Mike Hogdkinson, Chief Executive Office (CEO).

The following organisations were sent a draft copy of the policy for consultation. Table 5.4 describes their feedback (also see Appendix 6.4).

Table 5.4 Feedback from consultees

Organisation	Feedback
Department of Transport and the Regions (DETR)	Broadly welcomed the policy. However, they felt it was not specific enough and wanted to see objectives, targets and stronger commitments.
British Airways	Suggested that some stakeholders would question whether BAA had taken our eyes off the ball with regard to noise and air quality issues.
Delta Air (leading US airlines in this debate)	They were generally confused by our interest in this issue, and suggested that we were attaching too much importance to climate change.
Rolls - Royce	Felt that we had put too much emphasis on alternative

	fuels which may not be possible.
Forum for the Future	Were delighted with the first draft but wanted to see more focused objectives.

5.5.1 Meeting with the Contract with the Community board

I took the paper and two appendices to the CwtC board with the support of the Director of Planning and Environment and Kathryn Barker. The board approved that BAA did need a policy position on aircraft emissions and climate change and approved the recommendations from the scenario planning process. However, in a very challenging session, I was asked to talk them through each section of the policy position in minute detail. In addition to minor presentational points, the board had a number of comments;

- There was unequivocal rejection of the idea that BAA should sign up to the principal that aviation should cut its emissions of climate change gases in absolute terms;
- It was suggested that the text *'aviation should sign up to the principal of the Kyoto Protocol including reduction targets'* goes beyond the position of our airline customers and therefore should be removed;
- The need to stress that aviation was important to the UK's economy and should be viewed within the context of the UK's SD strategy as a whole
- The removal of all mention of the European Charge was required.

These concerns mainly centred around three main issues; BAA developing a position that went further than the 'responsible' airline position, inadvertently signing up to voluntary limit to BAA's growth and the need to stress the importance of the aviation industry to the UK economy and the role aviation plays in supporting the development of the 'knowledge economy' (new technology companies etc.).

With regard to a 'voluntary limit' I argued that aircraft emissions would clearly need to be reduced in the medium term. I stated that our research had demonstrated that this

could be achieved flexibly, by emissions trading or an alternative fuel and such mechanism would not necessarily cap BAA's growth. However, I suggested that this flexibility is only likely to be realised if BAA and others in the industry respond appropriately to this issue, by supporting the development of these mechanisms with some urgency.

On the second point, although I was also able to argue that the most responsible airlines would be happy with this position, this did not satisfy the board, as there was some mistrust that the Environmental management representatives actually represented the views of their Managing Directors.

With regard to the aviation role in the national economy, the board was suggesting that Government should view aviation's growth flexibly by allowing aviation's contribution to climate change to grow at the expense of other industries which are less wealth creating.

Kathryn Barker, the Director of Planning and Environment and myself undertook a re-drafting of the policy by committee and re-phrased problematic areas to meet the boards concerns. The second draft of the policy can be found (Appendix 6.6). The following changes were made:

- On the issue of cutting aircraft emissions the following was added "within globally agreed reduction targets". This set down the principal that aviation's contribution could increase within a reducing global cap in emissions;

- Instead of saying BAA believed that aviation should fully join Kyoto and accept global reduction targets the policy position was changed to say that "BAA understands the need to investigate how aviation should best join the Kyoto mechanism in order to prevent aviation been singled out for special measures";

- On aviation's role in the national economy the following was added. "When developing policy on climate change BAA believes that policy makers should view

aviation in the context of both the UK's climate change programme and the strategy for sustainable development, as well as aviation's important role in facilitating the high value low impact knowledge driven economy and in supporting the tourism industry";

- Any mention of the European charge was edited out, as this was considered to be one step too far for the airlines.

I was disappointed by these changes and found them short-termist in nature. I felt that despite the business having a sound understanding of the long term business risks posed by this issue the board was more interested in avoiding any short term political fall out from upsetting the airlines, than helping to achieve the long term sustainability of the sector.

Once the changes had been made the board was broadly happy with this wording and it was agreed that the Chief Executive should be approached to approve the policy position prior to publication.

5.5.2 Seeking approval with the Chief Executive Officer

BAA's Chief Executive is a charismatic man who is focused on his last two years in office. He was unaware of this work until he was presented with the CwtC board's approved policy position by the boards chair, the Strategy and Compliance director and myself. The session was led by the Chair of the CwtC board.

He agreed to the principal of having a policy position and was broadly happy with the position presented and the recommendations of the scenario planning process. However, he wanted to remove section four of the policy paper which detailed the long term vision of aircraft being powered by alternative fuels and the principal that aircraft emissions should be included in the Kyoto mechanism. He stated that;

" it sounds like we are saying that when we are all dead and buried we hope the situation will change"

This, he suggested, was too long term and it sounds like we are trying to fudge the issue. In addition, he declared '*I have no faith in alternative fuels*'. Choosing not to discuss the point about alternative fuels, I argued that signing up to the Kyoto mechanism and not being singled out for special measures was a fundamental element of this policy paper, as demonstrated by the SPP and that this had been mentioned in our response to the Future of Aviation consultation. However, I was unable to influence him. He said that he was uncomfortable with this paragraph and that saying too much on aircraft emissions publicly would mean that BAA's noise and air quality position would suffer, where he felt there was most public concern. He also argued that it was pointless setting a policy direction which looked so far to the future signalling a lack of personal commitment, leadership and vision on the sustainability agenda.

This was the first time I had met Hodgkinson and I was slightly taken back by his frankness and outlook. Despite his insistence to edit the policy position he requested that I came back to take him through the work I had done and develop a presentation for the Executive Committee. In addition he asked us to develop a workshop or seminar on climate change for the new year. Although I was disappointed with the final approved policy, particularly the reference to the Kyoto protocol which Kathryn Barker and I had secured as a message for BAA's response to the Future of Aviation Consultation, I felt that this approved policy (Appendix 6.7) would now lead the way to further work and more sophisticated messages on this issue being developed by the company.

5.6 Review policy position and next steps

Once the policy position had been approved I reviewed the policy process with the input of Kathryn Barker and the Planning and Environment Director and developed a strategy for moving the policy position forward over the coming year. This included;

- A strategy to influence manufacturers and airlines on climate change emissions
- Work with the ACI Europe Environment Committee to engage them in the aircraft emissions debate the AOA Environment and Planning Committee

- Discussion with British Airways to develop a partnership project on carbon off-sets
- Developing further understanding on the trade- off's between noise, air quality and climate change impacts of aviation.
- Developing a presentation for the Executive Committee on Climate Change and air craft emissions

6 : Impacts Of The Policy Development Initiative

This chapter outlines the impact this initiative (the policy development process and outcomes) has had on BAA and the external policy communities. Although it is difficult to divorce the impact of this policy development process and that of the developing SD programme in the business, some impacts can be directly related back to this work. The impacts presented have been assessed by considering the outcomes of this work and by the aid of continuous feedback and discussion with decision makers and collaborators on the policy making process itself.

6.1 Impact of the policy position - a platform for further work

As a result of this policy development initiative BAA now has a formal policy position on aircraft emissions and climate change which is published on its website www.baa.com (Appendix 6.7). In the policy statement BAA recognises the issue of aircraft emissions and climate change as a significant issue for the aviation industry. Accordingly the company pledges to;

"use its influence to manage aviation's contribution to climate change within an international framework of globally agreed reduction targets".

The policy also commits the company to work with airlines and manufacturers to improve their understanding of the issues associated with aircraft emissions and climate change and promote the need for political and sector wide leadership on the policy debate. The position also supports the development of economic instruments, such as emissions trading, to manage the impact of aircraft on the climate, under specific conditions.

In signing up to this policy BAA's position has been transformed from not believing or understanding it had a role in the debate on aircraft emissions to committing to undertake an *"influencing role".* This is a significant step forward and is a measure of the impact of the policy development process.

In the longer term the impact of this policy position, in terms of changing organisational behaviour and decision making; will depend on how the commitments and action prescribed in the policy statement and subsequent implementation strategy are taken forward. Currently these are being developed by means of an Influencing Strategy to influence organisations, such as the Confederation of International Airports (ACI) Europe's Environment Committee, the AOA (Airports Operation Association's) environment committee, the UK Government and Economic Regulator and the work with British Airways on a carbon off-set project. The ownership for these initiatives now rests with GAPE along with Corporate Public Affairs and Group Strategy. This is a further demonstration that this issue has been successfully integrated into the business as responsibility and ownership for its management has developed across the group.

Clearly the policy position approved by the business does not, in my opinion, go far enough or indeed adequately protect the business from the risks highlighted by this initiative. Perhaps the biggest oversight was the removal of the paragraph on BAA's future vision for how aircraft emissions could reduce their climatic impact and the need for aircraft emissions to come fully under the Kyoto Protocol. However, in the company's response to the Future of Aviation Consultation, which used the outcomes of this initiative to define its position, the business does suggest that aircraft emissions are brought into the Kyoto mechanism.

Although the published policy position will be criticised by environmentalists as not going far enough, it does provide a platform for further work both internally and with stakeholders. I am, therefore, confident that this position will be the beginning of a much stronger and more reflective BAA position on aircraft emissions and climate change

6.2 Impact on the external policy community and networks
It is unlikely that BAA's policy position will have an immediate or a major impact on the external policy community. This was not the intention of the work programme as the business specifically rejected the idea of developing a leadership position, which

went beyond the position of the more responsible airlines (with regards to their environmental position).

However, the process and outcomes of this work has had some impact externally. For example, the process has been featured by the UK Climate Impact Programme and Forum for the Future as examples of the private sector taking a 'proactive stance' to climate change issues[71]. Indeed the Campaign for the Protection for Rural England (CPRE), cited BAA's response to the Future of Aviation Consultation and BAA's policy on aircraft emissions in a recent report;

" even BAA suggests that aircraft emissions are a significant issue and suggest they should be brought into the Kyoto Protocol"[72]

Looking forward, clearly some of the actions and further work this process leads to may well have an impact on these policy communities in the future e.g. the carbon off - set project currently being developed with British Airways and the influencing work with ACI Europe. Furthermore, as BAA become more aware and engaged in this issue I am confident that their response will strengthen in the short to medium term.

Finally, the work has also developed a network of policy makers and advisors for BAA to consult and work with in the future. For example, some of the external participants have undertaken a similar scenario planning and development process as they found it a helpful and useful way of engaging individuals e.g. a scenario planning exercise held by Tony Houseman of the European Association of Aerospace Industries (ACEMA).

6.3 Impact on the BAA and Forum for the Future relationship

In the yearly review of BAA's annual report and sustainability report FFF indicated that they are pleased to see that BAA has developed a policy position on aircraft emissions and climate change but asks; *"so, how can you use your influence?*[73]*"*.

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[71] UK Climate Impacts Programme news letter September 2001
[72] Campaign for the Protection of Rural England (2001) *Manston the real story* Campaign for the protection for rural England
[73] Forum for the Future (2001) *Commentary on BAA Sustainability report* Forum for the Future

Jonathan Porritt, in his presentation to BAA's Senior Management meeting in June 2001, also declared that;

"sooner or later you [BAA] will have to address the issue of limiting growth because of the climatic impact of aviation and other impacts"[74]

FFF will continue to promote change and challenge BAA to develop a stronger position on this issue. In response to FFF's pressure, Mike Hodgkinson, reflected that moving the sector towards sustainability will be difficult, as their are no easy solutions to issue like the climatic impact of aviation;

"we [BAA] and Forum for the Future started from different points but we are now meeting in the middle and we are all struggling as to where to go from here"[75].

This statement from the CEO reflects the changing relationship between business and NGO's. It signals the likelihood that we will see, as agenda's move closer together, the birth of new strategic alliances between 'unlikely bed fellows' such as FFF and business, in order to find some workable solutions to key sustainability issues.

6.4 Impact on awareness and understanding inside BAA

The impact this process has had on BAA's internal thinking is by far the largest outcome of this initiative. These 'soft' or 'less tangible' outcomes are, in the long term, more likely to have a positive impact on this issue than the policy position itself.

The first of this these less tangible impacts is the fact that this issue is now firmly accepted as an area where the company needs a leadership position, with many individuals being 'unsatisfied' with the position agreed by Mike Hodgkinson. An understanding has developed, at the senior level, that this issue could impact upon BAA's business, both in the form of damage to the companies reputation and to the companies 'bottom line' in the future, if it is not managed appropriately by the sector.

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[74] Porrit, J. (2001) *Speech at BAA Senior Management Meeting* 11th June 2001 Heathrow
[75] Hodgkinson, M. (2001) *Conversation with Kathryn Barker and Mike Hodgkinson* Senior Management Meeting 11th June 2001 Heathrow

Secondly, awareness has also been raised in relation to the long term solutions available to the aviation sector if it wants to combat the issue of aircraft emissions and climate change. Some of these could allow the continued growth of the sector e.g. development of alternative fuels, carbon trading and rapid improvements in engine efficiency. The understanding of the complexity involved in realising any of these possible solutions and the scale of change which is required has also grown. The company has, for example, shown particular interest in the way in which the airline and manufacturing industry encourage the development of new technology and the methods open to BAA to speed up this process.

Under the direction of the Chair of the CwtC board, the debate on aircraft emissions and climate change is scheduled to be re-visited early in 2002 in order for the board to satisfy themselves that BAA has developed a strong enough leadership position on this issue. The board will recommend action If the board concludes that a stronger position is required. Again, this demonstrates that this issue is firmly on BAA's agenda and that there is a plan to review this issue in the short term.

6.5 Impact on BAA sustainable development programme

This work has taken forward the SD programme within BAA. With some senior managers declaring;

" you [the Environment Team] have done very well this year, your agenda has definitely gained more profile. This is not all down to your work, but you certainly have contributed to it"

In developing its views on aircraft emissions and climate change BAA has accepted that it has an influencing role in the debate, albeit in support of a stronger airline position. This means that its SD programme now covers this issue as an indirect impact of BAA's growing operation and, as a result, will ensure that the companies position with regard to aircraft emissions will be under constant review.

In addition, the outcomes of the SPP clearly identified an agenda of future work relating to the likelihood that BAA will be able to deliver on its long term business

plan of maximum growth in volume, without significant improvement in the environmental impact of the sectors operations. Another issue that emerged was the role of BAA's economic regulator in sustainability. Both these areas are, despite their sensitive nature, being followed up by the business in a separate, but related, work programme led by GAPE.

The work also demonstrated areas and gaps where the business needs to develop its thinking and capability. These include 'leadership' for SD at the CEO level and the need for a shared 'vision' within the business on what a sustainable growth for BAA would look like. Both of these key areas have been integrated into the current work programme of Group Planning and Environment, Human Resources and the CwtC board. Again this work-stream could, in the long term, have a significant impact on how BAA moves its sustainable development programme forward.

6.6 Personal impact and professional development

This role has provided me with a major learning experience. Although my ideology and understanding of sustainable development has not shifted I am now much more focused on and have a much broader understanding of how change can be delivered.

This role has taught me to become much more politically astute over the past two years and developed a much broader and politically aware understanding on what drives a business and government to develop genuine progressive policies on SD issues. However, this work has challenged my ideology and as a result has not always been easy. It has meant frequently compromising my personal views in order to achieve consensus or to move closer to sustainability goals. Developing strategies to deal with ideological issues has been a critical success factor in delivering this work.

Along with my growing political awareness my understanding of how society can develop and become more sustainable has become more sophisticated and more flexible. I now have a much wider appreciation of the role of the business sector and the positive power of market forces in progressing SD strategies, and the role that trade-off's between different economic sectors will necessarily play if society is going

to manage its resources more effectively and justly. I have also confirmed my belief in the, often underestimated need, for stronger leadership for sustainable development.

In relation to airport expansion my position has also changed. Where as I would once have described myself as against the expansion of the aviation sector I am now in favour of a more balanced approach involving some strategic expansion and better utilisation of current capacity. However, this is based on an environmentally driven step change response, from the sector on issues such as climate change. This could also be coupled with reduction in the impacts of other sectors of the economy, with the view to reduce the UK's overall impact.

The core skills I have developed and employed to successfully influence the business include; a strong capability in interpreting and translating the complex and different stakeholder views into a relevant and helpful format, influencing and driving forward these views in a meaningful and constructive way and negotiation commutation skills. In addition, the role and reflective nature of the DProf enquiry helped me test and reflect on my competency in a host of new areas including project management, presentation skills and influencing skills.

Chapter eight presents some of my main learning points from this work as recommendations to professionals wanting to influence internal policy making in a sustainability setting.

6.7 Policy development process in BAA

BAA has no formal SD policy making process. This work has helped to develop a number of mechanisms which will make subsequent policy development in this area more robust. This includes helping to formalise the approvals role of the CwtC board and in defining its broad strategic and direction setting role in the business. The work has also demonstrated the value of incorporating external thinking into policy development.

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7 Conclusions and Recommendations - The policy development model

This chapter presents some conclusions on both the policy development process and the role of business in SD. In addition, it makes some recommendations to BAA on how to take forward their SD programme and their position on aircraft emissions and climate change.

As a result of the action research approach adopted in this initiative the policy development model finally implemented evolved considerably from the starting position (figure 4.3), and the model the business approved for implementation (figure 5.1). The figure below, (figure 7.1) presents the policy development scheme which was finally implemented. Importantly, it differs from the model presented in figure 5.1 as it includes the integration of the brief and stakeholder analysis stage and a review of the policy outcomes in its final stages.

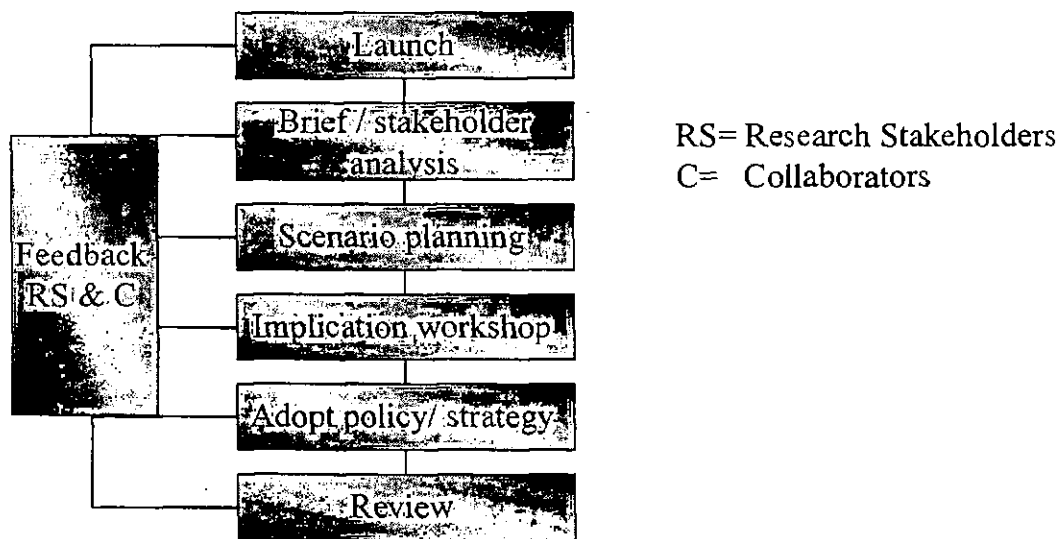RS= Research Stakeholders
C= Collaborators

Figure 7.1. Implemented policy model

Reflecting on how the policy model evolved as the process developed (figures 4.3, 5.1 to 7.1) helps highlight some of the key attributes and features of this policy

development process. These are discussed below, in some detail, and are likely to be transferable to sustainability change management processes in the private and possibly the public sector;

7.1 Spiral nature of the investigation: This research addresses a 'messy real world problem' which does not have a tight or well defined boundary. It was not a question of developing a policy model, carrying it out, reflecting on it, and then trying again in a true cycle. This research was more 'spiral' in nature and involved getting an idea, testing it, adding it into the process, getting input on progress so far etc. In a similar vein the process was described as 'iterative' by one senior manager who claimed;

"of course nothing else would work in BAA, we are such a consensus orientated company".

It is clear, therefore, that this research is a departure away from the fairly well contained, practical and organisational problems that action research is often deployed for, such as issues relating to professional practise in educational and health care settings. Rather, in this case, as the process developed and evolved the initiative became more political, engaged increasing numbers of people and became relevant to a growing number of agendas until there was a *critical mass* of individuals, agendas and understanding involved. At each stage of this process, organisational knowledge developed. This development of corporate knowledge, understanding and interest gave the process sufficient support to move forward. Trott (1998) defines this spiral style of knowledge creation- knowledge acquisition, sharing, and utilisation as an Innovation Management Framework[76].

In a commercial environment when relevance of a subject and timing is crucial this 'spiral' style of policy development is well suited, particularly when the process is driven by a business need that is recognised at a fairly junior level and the process wants to facilitate knowledge creation

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[76] Trott, P, (1998) *Innovation management and new development* Financial Times and Pittman Publication

7.2 Consensual and owned by the business: In the initial stages of this model it was not clear how engaged the business would become in the policy development initiative. On reflection, this initiative developed into a truly deliberative process which was influenced and managed by myself but owned and more heavily influenced by the research stakeholders. This meant that my personal ideas and view points were only one of the many inputs into the policy development process.

Ownership of this process, by the business rather than the GAPE team, had advantages in terms of the level of engagement and the learning and awareness raising role of the initiative. However, it seems likely that this approach did impact on the outcome of the policy development process. Firstly, as Whtye (1991) suggests, the deliberative and consensual nature of this style of investigation often results in a non radical solutions being developed- because consensus ensures that the most risk adverse opinions prevail. Secondly, as predicted by Wheelen and Hunger (2000) the reliance on consensus resulted in a company focus on incremental improvements rather than step changes in attitude and performance[77]. Whtye (1991) states;

> *"Radical innovations are not just incremental improvements of*
> *the existing solution, or the introduction of an already well*
> *known solution and principles.* [78]

To counter balance this trade off, the role of external professionals in the SPP and the continuous advisory role of FFF was designed to enhance more radical thinking and challenge the business.

Secondly, any form of self governance, where the risks are perceived as long term will result in a balanced decision being made between the short term need to protect share holder value and the longer term business risks. Indeed at the final approval stage of this policy development process the approvers were very careful

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[77] Wheelen, T. and Hunger, J,D. *Strategic Management and Business Policy* Prentice Hall
[78] Whtye, W (1991) *Participatory Action Research* Sage Publishing

to protect the business from short term risks, at the cost of managing the longer term agenda despite their increased awareness of the issues.

Finally, Senge *et al* (1999) theorises that in any leadership strategy or change strategy, change agents need to understand the 'limiting' processes that could slow or arrest change[79]. This is also referred to in strategic management literature[80]. Using Senge's theory the identification of the cultural and practical limits to this change process include;

Cultural

◊ BAA culture - cautious, risk averse and sheltered from the external world;

◊ Lack of leadership and vision for SD at senior level;

◊ Feeling that the business had little control over the future;

◊ Risks seen as too long term, resulting short term concerns were given overriding priority;

◊ Focus of the business and business process of physical development;

◊ Business values not in line with sustainability values.

Practical

◊ The existence of trade- off between noise, air quality and climate change emissions in engine technology development which is not adequately understood within the business;

◊ Lack of involvement of the CEO until the final stages of the work;

◊ Lack of a well defined approval mechanism.

However, despite these constraints to change, many commentators, inside and outside the business have been surprised at how influential and engaging this initiative has been. For example, Kathryn Barker was surprised at the extent of progress made on this subject within the company.

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[79] Senge, P. *et al* (1999) *The Dance of Change: the Challenges of Sustaining Momentum in a Learning Organisation* Nicholas Brealey Publishing
[80] Wheelen, T. and Hunger, J,D. *Strategic Management and Business Policy* Prentice Hall

7.3 Responsive to the 'political reality': Rather than being based on technical analysis the policy development initiative was based on stakeholder positions and political trends- such as the political nature of climate change. Indeed the scenario planning process was crucial as acting as an environmental scanning mechanism, in line with strategic management theory. The extent to which BAA was concerned with the politics of this issue is best illustrated by two reactions from the CwtC board, firstly the board was fascinated by the 'positioning quotes' of the different experts used in my first presentation, secondly, the fact the science of climate change was not questioned but was taken as a given. This did not mean that all board members understood or believed in the science behind climate change but rather, they all understood that the business had to respond to a growing political reality, whether or not they were cynical about the science. As appreciation of the political nature of this issue grew the initiative became increasingly strategic.

7.4 Protected risks, rather than visionary: The focus of the policy model on business risks was fundamental to developing a strong business case on why BAA needed to develop a policy on aircraft emissions and climate change. However, the focus on risks did make the development of a more visionary policy position, which went beyond controlling risks and advocated change, more difficult. This undoubtedly acted as a constraint to the change process. Focus on risks, for example, did not allow business values to be explored. Questions such as, *"what sort of business do we want to build and be part of and what sort of business would be proud to work for?"* were not discussed. Indeed I felt a pressure, throughout the process, to leave values out of the discussion. Another compounding factor was that both the business risk and scenario planning exercise encouraged people to believe that BAA had very little influence over the future direction of the industry. Such a hands off view of the future is contrary to many contemporary business writers. For example, Nordstrom and Ridderstrale (2001) state;

" The Future can not be predicted - it has to be created, either you see things happen or you make things happen"[81].

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[81] Ridderstrale, J. and Nordstrom, K. (2000) *Funky Business* BookHouse publishing

If a more visionary approach was authorised at the beginning of the policy development process (see section 4.11.1) this process may well have resulted in a more forward looking policy position, which also involved challenging the values of the company. This view is supported by Senge *et al* (1999) who describe profound change as organisational change that combines an inner shift in people's values and aspirations with outer shifts in process, strategies practices and systems[82]. So by simply working on the external policy positioning, they argued that, you will not achieve the inner shift in values. The fact that BAA was reluctant to engage with more values led and visionary discussion indicated a lack of desire within the business to entertain more forward thinking. This, perhaps, points to a lack of ambition and vision with respect to the companies SD programme. However, the strategic management model (see section 4.4) suggests that it is not surprising that the dialogue on the broader questions, regarding the companies vision/strategy, were not satisfactorily concluded within the policy process as these questions would be better addressed within a review of the companies environment strategy itself. Clearly the approach taken to review these issues broader issues outside the policy development process itself was the correct way forward.

7.5 Dealing with complexity:

" *Corporates must embrace complexity- not try to eliminate it. Complexity is horrific but fascinating. We have to have the courage to face it.* "[83]

This initiative put order to and helped BAA understand and begin to manage a complex issue. Like many SD issues the climate change impacts of aviation is confusing and complex to which there appears to be no easy answer. As Nordstrom and Ridderstrale (2000) put it the world is becoming increasingly interconnected or a 'funky village'. Where international travel is a cornerstone of modern society but where we are beginning to understand the growing impacts of air travel on the

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[82] Senge, P. *et al* (1999) *The Dance of Change: The Challenges of Sustaining Momentum in a Learning Organisation* Nicholas Brealey Publishing
[83] Ridderstrale, J. and Nordstrom, K. (2000) *Funky Business* BookHouse publishing

environment and local communities. In order to understand the complexity of this sustainability dilemma this initiative systematically painted a realistic picture of this complex and contradictory external world for the consumption of BAA managers, without over simplification or asserting a pre-determined solution. In this 'safe' environment the process allowed managers to pick their way though this complexity and form an opinion to the most appropriate BAA response. The capability of decision makers to acquire and utilise such complex knowledge and value webs seems to be a fundamental early stage in delivering proactive SD strategies.

7.6 Role of leadership: leadership is a crucial and often underestimated element to any change process. In this case three different types of leadership in SD are relevant. The leadership of senior managers, including the CEO, my personal leadership and that of the collaborators as change agents and finally the leadership stance of the organisation towards SD issues;

* **Senior managers and CEO leadership**: this process demonstrated the lack of leadership and vision for long term sustainable development of the aviation industry at the top of BAA. Without more engaged leadership and commitment to a long term direction BAA will be unable to develop its sustainability programme and undertake the crucial influencing it needs to within the industry. This support the research of (James et al 1999) which highlighted the importance of senior management leadership in delivering environmental policy[84]. For BAA this is currently particularly important as the economic vulnerability of the airlines (pose September the 11th 2001) may make them less able to respond proactively to issues of sustainability;

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[84] James, P. and Ghobadian, A. and Viney, H. and Liu, J. (1999) *Addressing the divergence between environmental strategy formulation and implementation* Management Decision Volume 37 Number 4 pp.338-348

* **Change agent leadership**: a crucial element to the successful management of this process was to know when to lead and when not to and which battles could be won and which are best left until a later date. This is a difficult balance to strike as loosing the trust of the business would by demonstrating a too radical agenda would have made this process impossible. On reflection, however, there are times when I could have taken a stronger line or more heavily defended a particular position.

Leadership is clearly situational and dependent on the sector, culture and position one is working in. However, in this process the attributes necessary to make this a successful change process were; understanding complexity, communicating key messages, influencing, building alliances, persistence and making the subject relevant to the business.

* **Organisation leadership**: BAA deliberately avoids high profile public leadership positions on sustainability issues. It's reasons for this include; not wanting to attract bad press by raising the profile of the issue, upsetting the airlines and the economic regulator, the significant costs of dedicating staff to an issue which will benefit the sector at large and believing its impact is too small to be worth the risk. However, BAA seems to de-value the role that leadership could play within the sector. Harris Olson, for example proposes;

> " *John Browne [BP] did more in one speech to transform the global debate on Climate Change than IPCC and Greenpeace had been able to do with years of effort .* " [85]

If BAA wants to develop its role in this area, perhaps in alliance with other companies, the company could have a major impact in engaging the sector in SD and in moving the sector forward in a

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[85] Elkington J; (2000) *The Chrysalis Economy* Capstone Publishing

more sustainable direction. This is in the long term interests of the business and is perhaps even more necessary, in the aftermath of the terrorist attacks in the US (September the 11th 2001), as the economic instability of the airlines will ensure, in the short term, that they are not in a position to undertake any long term thinking with regards to aviation's long term sustainability.

7.7 Role of Business in Sustainable Development

This work has reinforced my belief that the business sector has a major and growing role in the transition to sustainable development. The potential future role of economic markets, where business can, for example, trade their impacts has also been clearly demonstrated through this process. Though dealings with the UK Government, I have also realised that different economic or business sectors will win and lose in this transition to sustainability. However, progress is slow and there is still a lack of leadership from business on this agenda despite the pressure and the encouragement of organisations like FFF and WBSD and indeed governments.

I now feel quite strongly that there are some companies or 'new world businesses' who will seize the opportunities in the SD agenda. These companies will either be new companies set up on a totally different value system to exploit the emerging values of the modern consumer and society or they will evolve from some of the less cautious more creative corporates we see around us today- in a similar fashion in which BP, formerly British Petroleum is currently remoulding itself to Beyond Petroleum. At the same time other businesses will move slowly towards to more sustainable models of wealth creation, (either voluntarily or by being forced to) but will be incapable, due to company culture, lack of vision, a desire to avoid risks, to move quickly enough to seize the real opportunities.

Elkington (2000) developed a model which he calls a 'meta matrix' to describe how business models regenerate or degenerate different forms of capital associated with SD (natural, social, human, and manufactured) [86]. Using Elkington's model I would

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[86] Elkington J; (2000) *The Chrysalis Economy* Capstone Publishing

place BAA into the category of a 'corporate caterpillar', such a business is based on a long term unsustainable business model, has 'relatively' low impacts (compared to a major multinationals) and has a potential for switching to a more regenerative mode. To become a 'corporate honeybee', which is the ideal model for a regenerative and sustainable company, (and it equivalent to the 'new world business' I described above), BAA would need to develop a business model which was sustainable in the long term, it would have to innovate, relish change, be creative, develop a strong business ethic and invest heavily in low impact sophisticated technology.

However, BAA works in a constrained environment. It customers, suppliers and travelling public are, on the whole, not very interested in sustainability. In addition the fact that BAA has a captive and growing market (the UK travelling public) does not make the business case for radically changing BAA's business strategy. It is clear, however, that BAA will innovate as fast as it has to in order to keep 'one step ahead' of the environmental protesters. Indeed, this strategy appears to be paying dividends and has resulted in some environmental benefit in terms of improved efficiency. However, I don't believe, the company has the inclination, culture or perhaps the opportunity to become a 'new world business' in the short to medium term.

7.8 Recommendations to BAA

This policy initiative was developed with the remit to widen the scope of BAA's SD programme. The recommendations presented here, therefore, relate to how BAA should approach the issue of climate change and aircraft emissions and its wider SD programme if the business wants to demonstrate leadership in these key areas.

Climate change recommendations

BAA should;

- take a visible leadership role within the industry to encourage or facilitate the airlines and manufacturers to manage the growth in aircraft emissions (become more efficient and reduce total outputs) within the globally agreed reduction targets

(Kyoto targets). This should include the promotion of new technology, including alternative fuels, economic instruments such as emission trading and discussion on how best demand for travel should best be managed.

Sustainable Development Programme recommendations

BAA should;

- fully evaluate the costs of sustainable airport management and development and work to influence the economic regulator to consider focused sustainability related spend as an important role of the company and in the public interest. Failure to do this will mean that the regulator will continue to act as key sustainability constraint to the business and ensure that BAA finds itself increasingly in conflict with stakeholders;

- develop a sustainability vision based on a critical evaluation of values (from business and society) and reflect upon BAA's current business model. Such a vision will necessarily acknowledge the demand for growth in airport facilities, but should consider whether limitless growth is realistic or desirable within the context of these wider values. The business should consider other ways of creating value, perhaps by integrating with and investing in infrastructure within the wider mobility sector;

- develop the internal resolve and leadership for sustainable development to deliver this vision. Give BAA employees confidence that the business wants to *walk its talk* and is prepared to bear the appropriate external costs;

- define and develop BAA's leadership role for sustainable development within the mobility sector. BAA should consider forming strategic alliances with like minded companies and National and Local Government to develop policies and strategies which will deliver a significant change in sustainability performance in the longer term. This could involve the facilitation of a transport wide sustainability vision, to

include groups outside aviation so that the entire sector is encouraged to see its role as mobility providers rather than simply airports and airlines.

8 Recommendations To Sustainable Development Professionals

In this final chapter of the project summary a number of recommendations aimed at professionals entering the field of sustainability, such as FFF scholarship alumni, are presented. They are derived from reflecting on the personal experience and learning which has been achieved over the 18 month project experience. Although the styles of leadership in the area of sustainability policy making is, to a degree, sector specific these recommendations could also be applied to the public as well as the private sector. Furthermore, they may be helpful to sustainability campaigners who want to understand how the business sector approaches SD. For the majority of the recommendations links are made back to the relevant parts of this project summary. These recommendations make up some 'golden rules' or advice that I would offer anyone embarking on a internal change agent role, relating to sustainability.

* **This is a campaign rather than a battle.**

    At the beginning of my work at BAA I was keen to see early results. I wanted to state my case, battle my corner and see change. However, I was instantly frustrated at the slow pace of change and lack of vision that confronted me. It did not take me long to abandon this approach and seek an alternative.

    SD is one of many issues competing for space on the board room agenda, therefore, the *battle* style of creating change -bombard them with facts, figures and suggestions that they need to DO THINGS DIFFERENTLY is not sophisticated enough to win the board's attention. This is very much the approach I originally suggested to take forward my work inside BAA (section 4.10)

    Rather, I came to see my work as a campaign - long term, persistent, not headline grabbing, manipulative and both overt and covert. If one tactic didn't work I tried again from a different standpoint. As a close collaborator rather pessimistically said;

    " you don't often win, but if you are lucky you have a chance to have ago again"

Clearly, this is a long term process or campaign for change. By working inside an organisation you need to accept that progress will generally be slow. Indeed one FFF alumni stated, in reviewing these recommendations;

" if you are trying to promote change for sustainability in a business you need to love the process, because if you are only interested in the outcomes you'll never be satisfied"[87]

However, it is important not to get disheartened as a small changes in organisational thinking, can, in the long term have a major positive impact.

* **Understand the limiting factors to the change process (see section 7.2)**

If you are going to win the campaign then you have to understand the culture and competencies of the company or organisation you are trying to change and develop your approach and messages accordingly. Dealing with the factors which resist change e.g. in this case a non creative and cautious culture, are as important as dealing with the changes you are trying to create itself. Once you have engendered some degree of change you should expect new challenges and problems to emerge.

* **Build support, networks and alliances (see section 5.1)**

This is crucial, whether or not you are in a junior role. This initiative would not have delivered its outcomes if it did not have the support of well briefed and supportive network of decision makers and individuals. You should pay particular attention to the advice of decision makers who disagree with your position. This will enable you to understand their concerns and to position your response accordingly. Addressing their concerns head on can be a helpful strategy.

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[87] Wales, A. (2001) *pers comm*

* Develop a strong business case, in conjunction with the main stream business, but don't be afraid to talk about values'vision and opportunities (see section 7.4)

A well developed and coherent business case as to why the organisation should concern themselves with the issue in hand is fundamental to developing your policy position or change strategy. Developing a business case based on business risk is a useful tool to get decision makers to understand the threats of 'doing nothing' or taking different courses of action. However, to create a step change in direction or commitment any policy development process must also consider values a vision and opportunities. Without discussing values and opportunities the process becomes a balance between different risks (usually between short and long term risks), and fails to encourage the organisation to see how future trends and values could provide new wealth creating or quality of life improving opportunities. As one Forum alumni who works for a business put it;

"the synergy between the business case and the values/ impact change we want to achieve is very powerful when you find it - harnessing the business for social good is rewarding." [88]

* Embrace complexity try and order and prioritise it for consumption of decision makers (see section 7.5)

Sustainable development contradicts many of the trends and forces for change society currently faces. The complexity in the external world can be both frustrating and overwhelming for corporate decision makers who, by definition, do not have endless attention spans. This often leads to inaction and a desire to ignore the problem or wait until the issues are clarified. Furthermore, like Nordstrom and Ridderstrale (2000), I predict the world is going to become ever more complex and interrelated in nature[89]. Putting order to this complex web of values and trends is the critical first step in acquiring and assimilating the knowledge needed to develop successful SD strategies.

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[88] Hope, D. (2001) *Pers Comm*

[89] Ridderstrale, J. and Nordstrom, K. (2000) *Funky Business* BookHouse publishing

* **Deal with the political reality (see sections 7.3 and 4.10)**

I originally approached my work at BAA from a technical perspective. However, it became clear that the business found the political and stakeholder reality of the situation far more interesting than a technical analysis. In approaching any change management situation it is helpful, therefore, to place the issue in hand within the context of its political implications. This will help the organisation prioritise the issue and understand how it relates to the other agendas and issues the organisation manages.

* **Understand how different stakeholders will respond to similar messages.**

It is essential that you are aware of all the interfaces your organisation has with the external world and that you appreciate how messages will be received differently by different stakeholders. This will allow you to carry out a sensitivity analysis on external messages and help ensure that you have involved all stakeholders in decision making. At the beginning of this work I often fell in the trap of considering, primarily, how environmental and local community stakeholders would receive messages without considering the reaction, for example, of the airlines and city analysts. This did not help facilitate a relationship of trust between senior management and myself as I was initially unable to supply them with the balanced judgement they were looking for.

* **Be courageous.**

Despite all the messages above- that you need to think strategically, check statements with stakeholders, get 'buy in', position your messages, build trust relationships and alliances, you must also not forget to bite the bullet and go for what you believe in. Working in business or any large institution it is easy to get overwhelmed by the politics, the influencing and desire to stay trusted to the extent that you feel unable to give an honest interpretation of the scale of the issue. As Porritt (2001) said;

" with the professional, working in business, admittedly we are looking at incremental improvements, but they have a duty to tell it how it is and not hide from the issue, no matter how unpopular it makes them" [90]

This is a fine line to tread and you will need to develop your judgement as to when it is appropriate but sometimes you just have to be true to yourself and your beliefs and make it clear where your position is and tell the organisation what they are really dealing with.

In conclusion perhaps the five key things to remember are; this is a campaign not a battle (so use all the methods open to you, and enjoy it), deal with the political reality, build networks, talk about values and don't be scared to be passionate and tell decision makers why it is their interest to care and act.

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[90] Porritt, J. (2001) Speech at Green Alliance General Meeting *March 2001*

Appendices

1.1 Project launch - article in Management Update Summer 2000

A global challenge for aviation... but what can BAA do about it?

"Aviation must reduce or mitigate its impact on climate change if the sector is to grow"; so suggests a group of internationally respected scientists advising the International Civil Aviation Organisation. Renewable energy sources and cleaner technology will help meet the reductions needed at airports but what about aircraft in flight? Aircraft exhaust fumes are currently thought to cause about 3-4% of global warming. There is much uncertainty about the future impacts. Scientific scenarios for the contribution of aircraft by2050 range between 5 and 15%, with environmental groups focusing attention on the latter. However, one thing seems clear, despite predicted increases in engine and operational efficiencies, aircraft emissions will increase significantly over current levels as the sector grows.

Matched against growing evidence that overall emissions need to be dramatically cut to avoid damaging changes in global weather patterns, some scientists suggesting cuts by as much as 60%, and the existence of the International Kyoto agreement to control green house gas emissions, one begins to see a significant challenge facing the future of aviation.

Not surprisingly this has left the International community, European and National governments, campaign groups and the airlines considering carefully how aircraft emissions could be brought in line with the Kyoto agreement on climate change. Suggestions which have found support in some quarters include an International or European tax on Kerosene, a European charge for aircraft movements, the development of a tradable permit system that would allow airlines, (with an allocated license) to emit green house gases, to trade or buy excess permits, and the development of voluntary agreements with airlines. All of these schemes could have material business consequences for BAA.

A project has been set up in Group Planning and Environment, together with Corporate Strategy and the new Group Risk function, to consider these issues.

The objectives of the study are three fold; to understand the business implications (opportunities as well as risks) in more detail, to explore whether we can have a positive role in influencing International, European and airline discussions in this area and finally to develop an internal BAA policy position on the subject of aircraft emissions.

To meet these objectives a number of events are being organised through out the coming year. These include a scenario planning exercise through Corporate Strategy, discussion groups with external stakeholders and a risk workshop. If you wish to get involved in any of the above, have some opinions you wish to share or want some more information please call Emma Noble in Group Planning and Environment.

GAL- 4853

1.2 Briefing Paper

Everything you want to know about the global impacts of aviation.

Introduction

A major contribution of BAA's sustainable development strategy is to understand and interpret, for an internal audience, external environmental and social issues of concern. This supports the company in staying 'one step ahead of environmental groups' helping to manage external concerns cost effectively.

As part of this strategy Group Planning and Environment has initiated a work programme on climate change and aircraft exhaust emissions. This work has three main aims.

a) To understand the BAA business implications of the options to control the global warming impacts of aircraft and their BAA business implications

b) To consider if BAA can work with stakeholders to support the reduction of emissions from aircraft?

c) To develop a policy position on these issues emissions from aircraft?

In addition to Group Planning and Environment this work is being supported by Group Strategy and Group Risk Manager through a steering group.

What are the facts?

Aircraft emissions are currently responsible for around 3% of warming in the global atmosphere. Although this is a relatively small percentage aviation is the fastest growing source of green house gas emissions.

Concern, therefore, centres around the future impacts of aircraft as the sector grows.

Estimating future impacts is fraught with uncertainty, however the IPPC predictions, which are based on different growth forecasts for the sector, engine efficiency, operational improvements and fleet mix, estimate that aircraft could be responsible for up to 5-15% of the total warming by 2050. This means that total aircraft emissions will increase significantly over current levels negating the predicated increases operational and engine efficiencies.

This presents a challenge to the industry as, through the Kyoto Protocol framework, developed countries are expected to stabilise and reduce its emissions over the coming decade. International aviation will be expected to play its part in this process.

What is the science?

Aviation and Climate change

The IPPC report is the best source of information on the impacts of aircraft on climate change. However, there are still significant gaps in the knowledge on the true impact of aircraft on climate change.

The table below summarises the IPCC key findings on the environmental impacts of a 'basket of gases' that are released into atmosphere by aircraft engine exhausts.

Table 1- **Emissions from aviation**

Emissions	Name	Effects
CO_2	Carbon dioxide	Greenhouse effect
NO^X	Nitrogen oxides	Greenhouse effect (warming and cooling), ozone depletion (supersonic), acidification, local air quality issues
H_2O	Water vapour	Greenhouse effect, ozone depletion (supersonic)
SO^2	Sulphur dioxide	Greenhouse effect (cooling), ozone depletion (supersonic) Local air quality issues
CO	Carbon monoxide	Local air quality issues
CxHy (VOC)	Volatile Organic Compounds	Local air quality issues
Aerosol Particles	Sulphate and soot aerosols	Greenhouse effect, ozone depletion, local air quality issues

(Source: adapted from IPPC 1999 and Hewett and Foley 2000)

There are a number of factors which complicate our understanding of the impacts of aircraft in the atmosphere

- Different gases can be both a coolant and a warmer depending on the altitude they are emitted at

- Different gases have different 'residence' times in the atmosphere.
- Some gases have regional warming impacts but not global
- Some gases such as NOx change the concentrations of other gases leading to cooling and warming
- Some gases are net coolers

In summary of all the green house gases released into the atmosphere by aircraft CO2 causes the most warming. However, the other emitted gases e.g. NOx and water vapour have an additional impact which is not fully understood and could be as much as three times the impact of CO2 alone.

Science of climate change

There is now global scientific and political consensus that increasing concentrations of global warming gases such as CO2, CH4, NOX, CO, CFCs are likely to cause the global atmosphere to warm. It is predicted that warming will rapidly alter global weather patterns imposing significant shits in temperatures, rainfall, extremes of weather and temperatures in this century and beyond.

This summer the Royal Commission on Environmental Pollution (RCEP) released their latest report- *Energy and the Changing Climate.* The report supported the IPCC's findings that in order to avoid catastrophic climate change world concentrations of carbon should not exceed 550 part per million by volume (ppmv). For the UK, RCEP interpret this to mean a 60% reduction in CO2 emissions by 2050 and a further 30% reduction by 2080.

What are the policy makers saying?

International

The Kyoto Protocol (1997) provides an international framework for the stabilisation and reduction of green house gas emissions. It established the principal of emission reduction and stabilisation targets for developed countries. For example, the European Union (EU) , has a target to cut green house emissions by 8% by 2008- 2012. After that period further emission cuts will be requested.

Owing to difficulties in allocating emissions to different states International air transport was excluded from the Kyoto Protocol. Alternatively the International Civil Aviation Organisation (ICAO) was asked to make policy recommendations to the United Nations on how to control and reduce emissions from international air flights in line with the Kyoto agreement.

Table 2 summary of inclusion of aviation in the Kyoto Protocol

Kyoto Commitments	No Kyoto Commitments
Industrial/ developed economies *(referred to as Annex 1 of Climate Convention and/or Annex B of Kyoto Protocol)*	Developing economies
Emissions from domestic aviation	Emissions from international aviation

(Source: adapted from IPPC 1999 and Hewett and Foley 2000)

In response ICAO's Committee on Aviation and Environmental Protection (CAEP) set up three working groups to consider how, technology, operational measures and market- based options (tax's, levies, emissions trading or voluntary options) could limit or reduce the greenhouse gas emissions of aviation. The ICAO assembly will review this work in their next assembly in October 2001 in order to make recommendations to the UN.

Table 3 time table for work for ICAO action

ICAO Work	Time
Final report of CAEP work programme	January 2001
Recommendations debated In ICAO assembly	September 2001
ICAO report to Kyoto Protocol conference	November 2001

For us the working group looking into 'market based options' is the most interesting The most likely recommendations of CAEP are listed in the table 4.

Table 4 Most likely CAP recommendations

Policy Options	Participants	Supporting information
Open emissions trading	Annex 1 countries (developed economies)	ICAO's Forecasting and Economic Support Group suggest that this is the most cost-effective market based option

Emissions Levy	Annex 1 countries (developed economies)	several European Governments argued that we should retain a range of options for consideration, especially levies

European

In recent years the European Commission has indicated that is concerned by what it sees as the growing gap between the rate of growth of the aviation sector and the rate of environmental improvement.

"This trend is unsustainable and must be reversed because of its impact on climate and the quality of life and health of European citizens [1]"

Consequently the European Parliament is considering, a plan to develop an alternative action plan of targets and instruments to reduce the climate change impact of aviation as a safeguard to the ICAO process not working.

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[1] Communication from the Commission to the Council, The European Parliament, the Economic and Social Committee and the Committee of the Regions (1999) Air Transport and the Environment- Towards meeting the Challenges of Sustainable Development. COM (1999)

Two options being considered are:

> **Kerosene tax:** applied on all routes departing form a community airport. The commission acknowledges the colossal political barriers to achieving this and concludes by recommending an aviation fuel tax should be pushed via ICAO as it would have the highest environmental benefits and least negative impact on competitiveness.
>
> **European Aviation Levy/ charge:** imposed on all airlines for the amount of pollutants emitted on all flights starting or arriving on an airport located in the EU. It would apply to all inter European flights. However, on flights leaving or coming to the Union the levy would be reduced by 50%. Revenues from the levy could be used to feed a European Union fund for green house gas abatement measures.

Out of these two options the commission prefers an aviation levy or charge, stating that it will decide whether to recommend an emissions charge on aviation once ICAO reports on its findings. However, the commission clearly signals that if there is a lack of progress at the international level then it may recommend unilateral European action.

National

In the white paper in the Future of Transport the government stated its position to

"continue to pursue in ICAO the potential for environmental levies and to press for removal of the exemption from tax on aviation fuel, to encourage fuel efficiency"

In keeping with its position the UK government is a proactive member of the ICAO working group and assembly and is actively working to seek a 'respectable solution' through the ICAO process.

What are our stakeholders saying

Stakeholder	Principal Example	What are they saying
Local Authorities	Surrey County Council	* Suggested that BAA took a more responsible and enlightened approach to aircraft emissions recent workshop looking into Gatwick's development strategy. However, the majority of L around BAA airports have not shown any significant concern with regards to this issue.
Independent research or Environmental group	Institute of Public Policy Research (IPPR) - a UK based central left think tank	• Recommends an open trading system with the allocation of a fixed number of perm equivalent to an absolute reduction in emissions- a reduction of 5.2 % 2008- 2012 in line v Kyoto protocol target for Annex B countries of the protocol • Trading system that focuses on reducing or limiting the emissions of CO_2 from internatio aviation • The allocation of international aviation emissions to annex B parties based on the country departure and country of destination • A permit allocation ratio of 80% grandfathering to 20% auctioning, with a set a side fund new entrants • Airlines that accept emissions trading scheme currently under development by the

		Emissions Trading Group could be exempt form air passenger duty tax as an incentive • Suggests that Annex B countries develop a NOx emission charge. (Recommend that N should not be included in the emissions trading because its effect is regional and not glol impact depends on altitude emitted, and NOx is not part of the Kyoto Protocol).
	Royal Commission on Environmental Pollution (RCEP)	• Latest report looks at what sort of emission reduction the UK may need to make as contribution to meet greenhouse gas emission reduction targets in the future. • Scenarios developed by RCEP include assumptions on the growth of air transport sector. Th range from a small increase, stabilisation or decreasing trend in air travel • The report recommends that the UK government presses for an international taxation aviation fuel.
	FFF	• When reviewing the BAA towards sustainability Report (1999) Forum for the Fut commented that it would like to see BAA take a more constructive or involved approach

		introducing a tax on aviation and the global atmosphere. • Believe that, if we have ruled out supporting a tax on aviation fuel, we [BAA] should supp an emissions trading regime with "tough" emission reduction targets. In addition BAA sho support an intermediate European charge on aviation whilst the trading regime is developed.
	Environmental Defence Fund (US powerful environmental lobbyist)	• Suggest an emissions trading regime with a total emissions cap and allocated permits
	AEF (Air Field Environment Federation)	• Presses for a tax on aviation fuel or a an environmental levy. • Concerned by ICAO's reluctance to consider NOx and Water contrails in its deliberations o market based mechanisms • Concerned by the concept that emissions trading is market driven and permits may not refl true environmental cost of emissions

Industry	BA	• BA's position is that aviation needs to be balanced with all other domestic and indus emissions. In the most cost effective way for the economy as a whole.
		• The company insists that aviation should not receive any special attention .
		• BA favors the market based option of an open system of emissions trading or a system voluntary agreement.
		• It has, unofficially, proposed two emission schemes
		• Allocating permits to emit to aircraft. To build new aircraft by buying and scraping old o and re-using the old permits.
		• 2) Permits required for emissions generated by fuel use in excess of airlines targets. Targ would be reviewed and strengthened on a 10 yearly basis
		• BA's view is that emissions from domestic aviation in the UK should therefore be considered inclusion within UK emissions trading scheme .

	AOA	• The AOA has supported emissions trading as the most effective and cheapest econo instrument to control airline emissions
	Lufthansa	• Believes that aviation has a strong environmental record • Believes that the sector should concentrate on efficiency • Is supportive of the work on emissions trading (as the most realistic economic instrument) feels that much more work needs to be on the effects and detail of the scheme before it could supported
	IATA	• Is supportive of an open emission trading regime. Believes that the sector should not 'targeted' for reductions • In the interim prefers a voluntary agreement with the sector and the governing body based efficiency
	The Association of European Airlines	• AEA is anti the establishment on a tax on aviation fuel maintaing that this will have li environmental benefit, will cause job losses and will introduce economic distortions into

	(AEA)	European aviation industry. In the short term AEA supports a voluntary agreement on C emissions [2]. In the long or medium term the association supports an emissions trading regime
	Greener by design	• Supports a sector wide voluntary agreement. They are also broadly supportive of an emissi trading regime
	ACI	• The ACI does not have a proactive policy position on aircraft emissions and climate cha other than seeking to ensure that policy development at the international level will not hav negative impact on noise and local air quality standards.

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[2] Association of European Airlines (2000) European Airlines Resist Fuel Tax Plans press release 17th March 2000

What are we doing?

BAA's Position on the global impacts of aviation

We have no formal position on the global impacts of aviation as the airlines have traditionally managed and lead on this issue. Instead, we have focused our efforts on issues that have local impacts such as local air quality, noise and surface access and issues on the government's national agenda such as waste reduction and climate change emissions from airport buildings.

This position and focus of work has also been influenced by the T5 planning inquiry. The inquiry helped shape our approach to sustainable development and reinforces the need to respond to local and national environmental and community concerns in order to develop future airport capacity. In addition, government instruction before the inquiry ensured that the inquiry did not consider the global impacts of aviation during the T5 inquiry. As a result a BAA policy position on the global impact of aircraft was not prepared for the inquiry.

External communication on this issues have formed part of BAA's wider sustainable development and environmental reporting. In its two most recent reports BAA has given an up-front account of the issues and challenges facing the aviation sector in relation to climate change. However, no preferred policy position has been presented and support for a tax on aviation fuel has been rejected.

In addition, In 1999 the Contract with the Community board discussed the Forum for the Future proposal that BAA should support the imposition of a tax on aviation fuel. At the time is was felt that this proposal could not be supported for two main reasons. Firstly, that this could damage relations with airlines customers and secondly that this would not prove environmentally effective.

Understanding

The understanding of this issue varies across BAA, however there is a general perception amongst senior managers that this could be a significant issue for the company in the future. The need to understand discus this issue through informed debate is therefore supported at senior management level.

In addition a small area of expertise within the organisation on this subject exists in the Environment team in Group Planning and Environment.

Examples of Good Practise

Although the company does not have a defined policy position on this issue the company has demonstrated good practise through a number of varied initiatives

- In 1999 BAA organised and hosted a meeting between Forum for the Future and BA on global emissions. In this meeting BAA clarified its position as an 'encourage' of debate.

- BAA helped to shape Europe's Airports Council International ACI response to the EU consultation on aviation and the environment.

- Presentation by AEA on the subject of aircraft emissions in 1998

What are the next steps?

We need to develop a deeper understanding of the issue of aircraft emissions and climate change and assess the risk of different positions the company could take, including no action. The proposed way forward includes;

1) Development of a scenario planning process with Mike Toms' team on aircraft emissions and climate change

2) Development of a number of policy options

3) Approval and implementation of policy options and stance.

2.1 Introduction to the Scenario Planning Process- -Briefing Note For The Business Steering Group And External Participants

Scenario Planning Framework

'Scenarios are planning and communication tools used to explore uncertain and sometimes disputed futures.... They do not intend to predict the future; rather highlight current choices given possible futures.'

1. Background

Who knows what the future may bring? Globalisation, sustainable development and increasing competitive markets present companies with new opportunities and new challenges. Ones which can and can not be foreseen. Scenario planning is a technique which aims to help organisations understand the uncertainties of the future, enabling decisions makers to take decisions with an enhanced awareness of the opportunities and the risks.

The scenario planning techniques could be used to explore possible futures related to climate change and aircraft emissions- an area that could influence aviation in the future. The uncertainties associated with this field present companies up and down the aviation 'supply chain' with new ventures and new risks[3].

The scenarios are developed through a series of interviews with leading experts involved in the fields of aviation, climate change, policy development, business strategy and forecasting. Their input will be the building block for the scenarios ensuring that the scenarios are realistic and internally consistent.

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[3] The scenarios developed will differ from the Intergovernmental Panel on Climate Change (IPCC) scenarios in that there range would be wider, they would cover political, regulatory, business and wider societal issues. The output from this process will be a story line rather than a technical forecast/or technical scenarios.

For BAA this exercise will help illuminate how these scenarios could impact upon BAA and allow us to consider how these impacts could be managed.

The scenario planning exercise will most likely touch on two key aspects of future uncertainty, namely;

1. the world's business environment (regulation, commercial trends, competitiveness, the physical environment, technology, virtual world,) This will have relevance to BAA and the other aviation stakeholders

2. likely future impacts on BAA (a number of impact indicators will be identified)

2. Objectives of scenario planning exercise

- Familiarise an internal BAA audience with possible 'futures' relating to climate change regulation, policy and impacts on BAA

- Stimulate discussion with BAA and leading experts and stakeholders about possible futures relating to climate change and aviation

- Test BAA business objectives against these scenarios

- Analyse what BAA needs to do in order to manage these uncertainties and take advantages of the opportunities the future presents. The scenarios will be sensitive enough to allow an assessment of both the value of different options and the degree of flexibility that need to be built into future strategies

- stakeholders will be able to use the scenarios to inform discussions in their own organisations

3. Business ownership

It is essential that the developed scenarios and are not perceived as the 'property' of group planning and Environment. This means that the process has to participatory with senior managers having a large amount of input. The ownership should rest with Dprof steering group;

◊ Lynne Meredith - Director of Planning and Environment

◊ Mike Toms- Director of Corporate Strategy

◊ Alan Osborne - Director of Risk.

4. External input

The involvement of external participants has three advantages;

- allows BAA to unlock their understanding, expertise and perception of the future

- facilities a dialogue and develops further working relations between BAA and aviation stakeholders and partners

- helps create a common platform of understanding on the issues and to improve the quality of debate

- gives external participants access to material and viewpoints they could use in their organisation

5. Possible outputs

- Background paper - presenting the future issues

- A number of future scenarios - a framework would be developed that could be used within wider scenario planning exercises

- Strategy inputs/ document - detailing possible options for BAA on how to manage the climate change agenda

- Process document - reviews process for building scenarios, and running a scenario planning workshop*

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* In conjunction with Group Strategy (Alison Livesley)

6. Process

Main stages	Completed by
Background - Speak to key experts about developing scenarios and scenario planning workshops e.g. Frans Berkhout (SPRUE) Gareth Price Director of St Andrews Management Institute	Early October
Diagnosis- Interview internal and external people regarding the future relationships and trends between aircraft emissions and climate change- use the open ended questions developed by Shell Consider using Environmental futures as a framework to develop a framework for 2 or more (max 4) aviation and climate change scenarios Consolidate interview notes into key themes or agendas	Mid October & November
Investigation- Hold workshops to develop themes more	December
Scenario Generation- Develop scenarios in a small scenario team Pilot scenarios with senior managers and the Group Planning and Environment Write background paper which introduces scenarios to internal audience	January

Scenario to Strategy component- Undertake scenario planning strategy workshop into a strategic options this could then be developed into a strategy document if research stakeholders require	February
.	
Overview- Evaluate success of exercise	December

7. Key internal people (10 internal)

Richard Everitt

Mike Toms

Lynne Meredith

Kathryn Barker/ Claire Williams

Alan Osborne

Stan Maiden/Richard Shaw?

Roger Cato/Janis Kong?

Commercial input eg. Mick Temple/Tony Douglas

Vernon Murphy

guidance from key internal people on who else to talk to*

8. Key external people (10 external) from the following

Government and European Officials

- Mike Rossell (Govt official seconded to European Commission)
- Ruth Frommer (Director Environment DG11)
- Michael Mann (DETR)
- Caroline Lucas (MEP)

Scientist

- Dave Lister (Defence Research Association)

Economic Forecaster

- Deanne Juliues Bank of England, Paul Elllis, BA

Environmental campaigners/ authors

- Jonathan Porritt
- Tim Johnston
- Amorey lovins
- Walt Patterson

Industry Experts

- Hugh Summerville/ Andrew Sentance
- Leonie Dobbic
- Shell/ Air BP
- Aerospace
- Avi Gil (ACI)
- Callum Thomas

Opportunity: A back casting exercise

Depending on views it may be helpful to undertake a backcasting exercise in combination with the scenario planning process. This would involve the group nominating a preferred future or elements of a particular future. The group would then work their way back from the 'future vision' to the present day creating a 'pathway' which describes how to make the vision become a reality.

Objectives would be to:

- Sketch a pathway which describes what BAA and other stakeholders need to do in the short and medium term in order to steer the future in the desired direction
- Elaborate what BAA stakeholders think our 'role' in this should be

- Develop possible recommendations for taking work forward with stakeholders

The group could decide to make this form part of the final scenario planning workshop

2.2 Summary Of Findings From The Scenario Planning Interviews

The following briefing summarises the key findings from 24 interviews conducted over November and December 2000 as part of a scenario planning exercise. The exercise has been set up to explore possible futures relating to climate change and aircraft emissions. It has the following objectives;

- Familiarise an internal BAA audience with possible 'futures' relating to climate change regulation, policy and impacts on BAA
- Stimulate discussion with BAA and leading experts and stakeholders about possible futures relating to climate change and aviation
- Test BAA business objectives against these scenarios
- Analyse what BAA needs to do in order to manage these uncertainties and take advantages of the opportunities the future presents. The scenarios will be sensitive enough to allow an assessment of both the value of different options and the degree of flexibility that need to be built into future strategies

In order to record a wide range of opinions interviews were conducted with external experts and internal BAA personnel (table 1). The external experts covered a wide range of opinions from airlines, manufactures, airports, regulators, national and European politicians and civil servants and environment groups. Table 2 (appended) lists the questions used at each of the interviews. The time scale for the scenarios is 2030.

External	Representatives
DeAnne Julius	The Bank of England
Mark McLellan	London Luton Airport
Tony Houseman	AEMA
Mike Rossell	European Commission
Le Thi Mai	Association of European Airlines

Hugh Summerville & Andrew Sentence	BA
Paul Eikins	FFF
Colin Beesley	Rolls Royce
Michael Mann	DETR
David Lee/ Roger Gardner	DERA
Caroline Lucas	European Parliament
Ufi Ibrahim	World Tourism Council
Oliver Jones	Parliamentary Unit
Tim Johnston	Airfields Environmental Federation
Duncan Eggar and Ken Massey	Air BP
Tim Deene and Dieter Helm	Oxera
Richenda Connell	Climatic Change Impact Programme
Internal	**Job Title**
Mike Toms	Group Strategy & Regulatory Affairs Director
Lynne Meredith	Group Planning & Environment Director
Andrew Currie	Community Relations Director
Alan Osborne	Group Risk Management Director
Richard Everitt	Group Planning and Compliance Director
Paul Le Blond	Rail Strategy Director
Kathryn Barker/ Phil Dunn	Head of Group Environment/ Environment Advisor

Table 1 list of interviews

1.0 Key themes from the interviews

In order to build the scenarios the results of the interviews have been analysed.
Key themes are listed and discussed below as 'drivers for change' and 'headline

uncertainties'. For obvious reasons the lists below do not reflect the complexity of how all the sources of uncertainties interact and relate to one another.

1.1 General drivers for change in the area of climate change and aviation:

These drivers for change are not independent of each other.

Physical impact of climate change. This was seen as a major driver for change. It was felt that the scale, type and distribution of the physical effects of climate change will be a major factor in determining the impact of climate change on the world economy and global stability. These physical effects will also have an uncertain influence on the demand for travel and the physical ability of the sector to develop and deliver its services.

Political nature of climate change. Another key driver for change. There was consensus that the level of political and public response to climate change could have a major impact upon regulation and the public perception of aviation and the development of increased capacity.

Scientific understanding. The considerable uncertainty surrounding the exact nature of the impact of aviation on climate is another area of uncertainty that could have a major impact upon how policy, regulation and technology develops over the next 30 years, e.g. impact of contrails, and NOx in the upper atmosphere

The world economy and governance. The rate of demand and growth in the aviation sector has historically been influenced by the growth in the global and regional economies . The price of oil, global stability and the development of IT communications were also all listed as important drivers for change

1.2 Headline uncertainties:

These drivers for change all appear to impact upon and interact with a number of 'uncertainties' listed below. They are in no particular order.

Regulatory environment

⇒ Relationships between US and Europe - is regulation dominated by Europe or is there successful International agreements on i) climate change, ii) aviation role in climate change?

⇒ Level of regulation -risk of a cap on growth or cap on activity

⇒ Predictability of regulation

⇒ Existence and level of demand management

⇒ Existence, success and confidence in emissions trading & charging

⇒ State of the national planning mechanisms

Price mechanisms

⇒ The cost of flying and therefore who is flying, e.g. elitist groups, mass markets, business class

⇒ Do we provide for quality or volume?

⇒ How is tourism and travel valued ?

⇒ Level of substitution to rail for short haul and what is BAA's role in that

⇒ Type of destination, type of plane, load factors

⇒ Does the regulatory regime of BAA airports reflect the environmental cost

Level of response from the sector- 'enlightened self interest'

⇒ Reputation of sector and relationship with stakeholders

⇒ Level of public direct action - directed at who?

⇒ Risk of draconian regulation

⇒ How are we using the precautionary principal?

Technological developments

⇒ Success of sector - ability to buy new aircraft

⇒ Environmental priorities Nox, Noise, efficiency and how that influences airport developments and engine manufactures

⇒ Level of incentivisation for fleet renewal

⇒ Alternative fuels - infrastructure issues

⇒ Size of aircraft

Lifestyles

⇒ Quality of lives

⇒ What are the predominate social values?

⇒ Population and distribution of wealth and health

⇒ Are we reliant on local communities or global communities or have we managed to combine the local and global successfully?

⇒ What do we think about mobility- how do we value travel?

⇒ How are people living and working?

⇒ How has IT impacted upon our lives?

⇒ Has the third world gained from technology transfers?

⇒ Is the 'green' vote an important politically?

Institutional issues

⇒ Ability of ICAO to deliver - level of institutional reforms

⇒ Pressure from the European Parliament

⇒ Ability for the sector to establish priorities and work together

⇒ Range of stakeholders e.g. involving more tourism/ travel and mobility organisations than purely aviation stakeholders

⇒ Partnerships across sector and across different sectors

⇒ Ability to influence international debate

⇒ Access of different stakeholders to decision making

⇒ RND levy for alternative fuels

Detailed interview notes have not been included

2.3 Scenario Planning Workshop Agenda

SCENARIO PLANNING WORKSHOP

Aircraft emissions and climate change- what does the future look like for aviation, airports and their development?

26th January 2001

12.00-17.00

BAA Board Room, 7th Floor 130 Wilton Road

Objectives -

- Familiarise a BAA and an external audience with climate change and its possible impact upon aviation

- Develop some scenarios around climate change and aviation. Consider how these scenarios could impact upon the aviation sector and BAA over the next 30 year period.

AGENDA

1) Reception and Lunch	12.00
2) Welcome (Richard Everitt)	12.30
3) Opening Presentations	12.35-13.35

- Objectives of the scenario planning exercise (Emma Noble)
- Physical and economic impacts of climate change (Dr Richenda Connell UK Climate Impacts Programme)
- Political and policy implications of climate change (Dr Tim Denne, OXERA) *Title not confirmed*
- Workshop mechanics (John Bullen)

4) Develop scenarios - (3 Groups)   **13.35-15.20**

In groups you will be asked to develop a limited number of scenarios using the 'thought prompters' provided as well as any other ideas you may have. These scenarios will describe what you think the world could look like in 2030. In order to help communicate the scenarios you may want to use a number of themes, for example, growth in travel, passenger numbers, GDP, level and style of regulation, impact of climate change or reputation of the sector.

15 minute break

5) Review scenarios - (All)   **15:35-16:30**

Each group will be asked to present their scenario, followed by a general discussion. It would be useful to conclude by ranking the scenarios in respect of the

likelihood of each arising and the severity of their impact for BAA

8) Next steps - and close   **16.35**

2.4 Attendance List For Scenario Planning Process

SCENARIO PLANNING WORKSHOP

1200-1700 - Friday 26 January
Board room, BAA, 130 Wilton road

1. Kathryn Barker, Head of Group Environment

2. David Brewer, Group Risk Policy Manager

3. Andrew Currie, Community Relations

4. Alastair Duff, Transport Strategy Advisor

5. Richard Everitt, Group Planning and Compliance Director

6. Paul Le Blond, Director of Strategy, Heathrow Express

7. Shaun McCarthy, BAA Group Supply Chain

8. Lynne Meredith, Group Planning Director

9. Emma Noble, Sustainability Projects Advisor

10. Alan Osborne, Group Risk Management Director

11. Mike Toms, Group Strategy and Regulatory Affairs Director

12. Richard Shaw, Forecasting and Statistics Manager

13. Richenda Connell, Climate Impacts Programme (UKCIP)

14. Mike Crompton, Department of Environment, Transport and the Regions (DETR)

15. Tim Denne, Oxford Economic Research Associates Ltd (OXERA)

16. Richard Farmer, Air BP

17. Matthew Gorman, Forum for the Future

18. Tony Houseman, European Association of Aerospace Industries, (AECMA)

19. Ufi Ibrahim, World Trade and Tourism Council (World Trade and Tourism Council)

20. Tim Johnston, Airfields Environment Federation

21. Brian Pearce - Forum for the Future

22. Mark McLellan, London Luton Airport

23. Hugh Summerville, British Airways

Facilitators

- John Bullen, General Manager Business Development
- David Nowell, Environmental Communications Manager
- Alison Livesley, Corporate Strategy Manager

2.5 Briefing Material For Scenario Planning Workshop

Preparation for scenario workshop

What is scenario planning ?

1.0 What is scenario planning?

Scenario planning aims to construct plausible views or pictures of different possible futures based on key environmental influences. In this case we are looking at a time horizon of 2030 in line with the period over which the Government is seeking to develop an Air Transport Policy.

2.0 What is a scenario?

A scenario is a 'story line' which explains what the future looks like at a specific time- what you think the world will look like in 30 years. Scenarios are often expressed using a set of 'descriptors' in this case these may be;

- Rate and effect of climate change
- level and style of regulation
- The political climate
- price of flying
- Reliance on the 'virtual world'

3.0 Scale of the scenarios

The scenarios should have a global, aviation and airport dimension. If you build the global dimension first this will help you focus on how the global 'picture' you have constructed will influence the aviation sector and then the airport environment.

To get you thinking take a look at the following themes and think about how they may feature in your scenarios. Each of these issues was discussed at length in the 23 scenario planning interviews held in November and December. They were then discussed in detail in an internal meeting.

1.1 General drivers for change in the area of climate change and aviation:
These drivers for change are not independent of each other.

Physical impact of climate change. This was seen as a major driver for change.. It was felt that the scale (if any), type and distribution of the physical effects of climate change will be a major factor in determining the impact of climate change on the world economy and global stability. These physical effects will also have an uncertain influence on the demand for travel and the physical ability of the sector to develop and deliver its services.

Political nature of climate change. Another key driver for change. There was consensus that the level of political and public response to climate change could have a major impact upon regulation and the public perception of aviation and the development of increased capacity.

Scientific understanding. The considerable uncertainty surrounding the exact nature of the impact of aviation on climate is another area of uncertainty that could have a major impact upon how policy, regulation and technology develops over the next 30 years, e.g. impact of water contrails, and NOx in the upper atmosphere

The world economy and governance. The rate of demand and growth in the aviation sector has historically been influenced by the growth in the global and regional economies . The price of oil, global stability and the

development of IT communications were also all listed as important drivers for change

These drivers have the ability to influence the following 'themes'- which impact upon the aviation sector.

Regulatory environment

⇒ Relationships between US and Europe - is regulation dominated by Europe or is there successful International agreements on i) climate change, ii) aviation role in climate change?

⇒ Level of regulation -risk of a cap on growth or cap on activity

⇒ Predictability of regulation

⇒ Existence and level of demand management

⇒ Existence, success and confidence in emissions trading & charging

⇒ State of the national planning mechanisms

As a result we invite you to put together a proposal which would set out how you would propose to provide us with some strategic advice on the issue of aircraft emissions trading in the context of the Air Transport consultation paper.

In particular we would like the proposal to address why you think BAA needs strategic advice on the following (or any other related) issues and how you would be able to help us in terms of addressing;

- How far we should go in trying to shape the government's policy on this issue?

- What opportunities, if any, does aircraft emissions trading, or any other mechanisms to address aviation's contribution to Climate Change, offer BAA and how best should we deal with these opportunities in the consultation?

- What strategic risks does BAA face if a global system of aircraft emissions trading were to be introduced?

discuss the interrelationships between slot values and emissions permits, and thus how permits would affect the price of slots, and the allocation of scarce capacity.

2.6 Presentations For The Scenario Planning Workshops

2.6.1 Presentations by Emma Noble for scenario planning process

Aircraft emissions and Climate Change- what does the future look like for aviation, airports and their development?

Emma Noble
Group Planning and Environment   BAA

Today's Objectives

- Develop some scenarios
- Familiarise an internal/external audience with the possible impacts of climate change and aircraft emissions
- Consider the risks and opportunities

A few facts

- Aircraft emissions currently responsible for around 2-3.5% of global warming
- Considerable uncertainty over future impacts depending on:
  - growth rates
  - technical improvements
  - fleet mixes
  - contribution of contrails
- Estimates range from around 5.6% by 2050, with one scenario as high as 16%

Scenario planning

- Story lines - explore uncertain & sometimes disputed futures

- Scenario planning exercise
  - 24 1:1 interviews
  - Workshop (25 people- internal and external) to derive scenarios
  - Implication workshop - internal

- Decision matrix

Who have I talked to?

Key experts and opinion formers from:

- Industry
- Government
- Economists
- Environmental Groups
- BAA internal

What have they been saying?

" There is no question in my mind that climate change could get sensationally political"

Dieter Helm - Oxera

What have they been saying?

" Looking forward, the industry will only have themselves to blame if things go wrong for them"

Mike Rossell - The European Commission

What have they been saying?

" Currently this is one of the biggest risks facing BAA - certainly one of its biggest challenges....... you need to push for some serious work on alternative fuels by 2010"

Paul Ekins - Director of Forum for the Future

What have they been saying?

"This is not an issue for airports and we [BAA] have nothing to gain from getting involved in these discussions"

Vernon Murphy - Regional Airports Director

What have they been saying?

"You [BAA] are doing really well on the local impacts of your operations, but what worries me is who is looking after the global impacts"

Dr Caroline Lucas - MEP

What have they been saying?

"It would not surprise me if the politics in 2010 is split by the environmental votes"
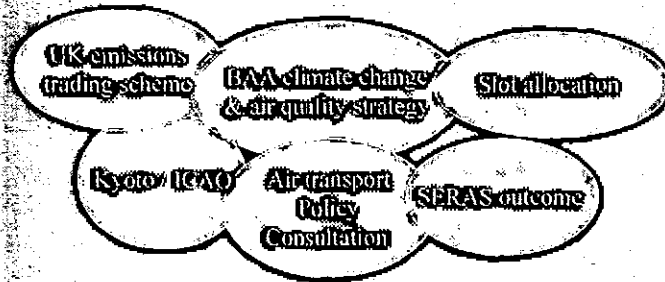
DeAnne Julius - the Bank of England

What have we been saying?

"...the environmental challenge is to address the contribution of aviation to climate change, bringing it within the Kyoto agreement to reduce greenhouse gas emissions"

Mike Hodgkinson - Future of Air Transport Conference 12 December 2000

Some possible interfaces

UK emissions trading scheme

BAA climate change & air quality strategy

Slot allocation

Kyoto / ICAO

Air transport Policy Consultation

SERAS outcome

Air Transport Consultation (20% of the questions are directly relevant to "emissions"!)

For example:

1. "To what extent should the Government rely on regulation to influence noise, emissions, and other environmental effects of aviation, and to what extent are economic instruments or voluntary agreements more appropriate?"

2. Where should the UK Government concentrate its efforts in international negotiations on environmental impacts?

Output

○ Scenario report

○ Scenarios- for use internally/ externally

○ Analysis of risk and opportunities

○ Policy development and position

2.6.2 Presentation by Dr Richenda Connell The UK Climate Impacts Programme

UK CIP and the Impacts of Climate Change for the Aviation Sector

presentation to BAA Scenario Planning Workshop
26 January 2001

Dr Richenda Connell
UK Climate Impacts Programme

UK Climate
Impacts
Programme

Outline

- Rationale and role of UKCIP
- UKCIP core tools and datasets
- Studies underway
- Potential impacts of climate change for the aviation sector
- Future research needs

UK Climate
Impacts
Programme

Origins of UKCIP

- Followed on from CCIRG 1996
- Detailed scoping study by team of "experts" identified the structure of UKCIP, its approach and first priority studies
- Funded by DETR from 1997

UK Climate
Impacts
Programme

Rationale for impacts and adaptation work

- *Mitigation* - reducing greenhouse gas emissions - is main focus of DETR's efforts, BUT
- Some climate change will occur making *adaptation* necessary (EU stabilisation target of 550ppm CO₂ i.e. 2-3°C temperature rise)
- Impact studies drive policy on measures to reduce greenhouse gas emissions

UK Climate
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Role of UKCIP

- Overall aim of UKCIP: "to establish a research framework for the *integrated* assessment of climate change impacts in the UK"

- Current objectives: "to co-ordinate and integrate a *stakeholder-led* assessment of climate change impacts for the UK at a *regional and national* level"
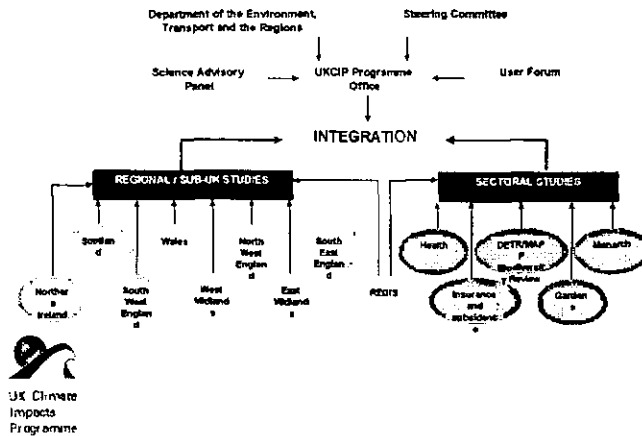
UK Climate
Impacts
Programme

Funders of UKCIP studies

UK Climate
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Department of the Environment, Transport and the Regions | Steering Committee

Science Advisory Panel → UKCIP Programme Office ← User Forum

INTEGRATION

REGIONAL / SUB-UK STUDIES | SECTORAL STUDIES

Scotland, Wales, North West England, South East England

Northern Ireland, South West England, West Midlands, East Midlands, others

Health, DETR/MAFF Biodiversity Review, Monarch

Insurance and subsidence, Gardens

UK Climate Impacts Programme

UKCIP core tools and datasets

- Climate change scenarios - UKCIP98, UKCIP2001
- Socio-economic scenarios
- Risk and uncertainty in decision-making (early 2001)
- Methodology for costing the impacts of climate change (early 2001)
- Datasets (soils, land cover, designated sites etc.) - access, quality assurance, integration, GIS

UK Climate Impacts Programme

UKCIP98 climate scenarios

- Developed for UKCIP by:
  - Climatic Research Unit, UEA
  - UK Met. Office's Hadley Centre for Climate Prediction and Research
- Four scenarios, describe how the UK's climate might change over the next 100 years
- Each has three 30-year time-slices centred on the 2020s, 2050s and 2080s

UK Climate Impacts Programme

Change in
average annual
temperature (°C)

UK Climate
Impacts
Programme

Change in average annual temperature (Celsius).
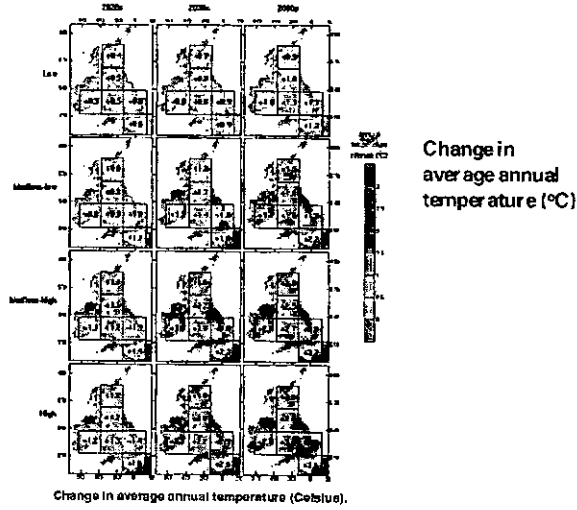
Night minimum temperatures
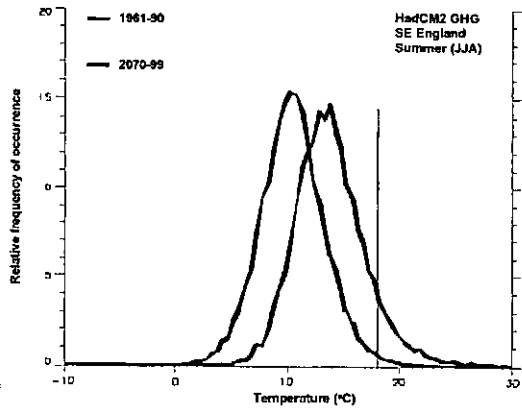
UK Climate
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Source: Hadley Centre for Climate Prediction and Research

50

Change in mean
winter (DJF)
precipitation (%)

UK Climate
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Programme
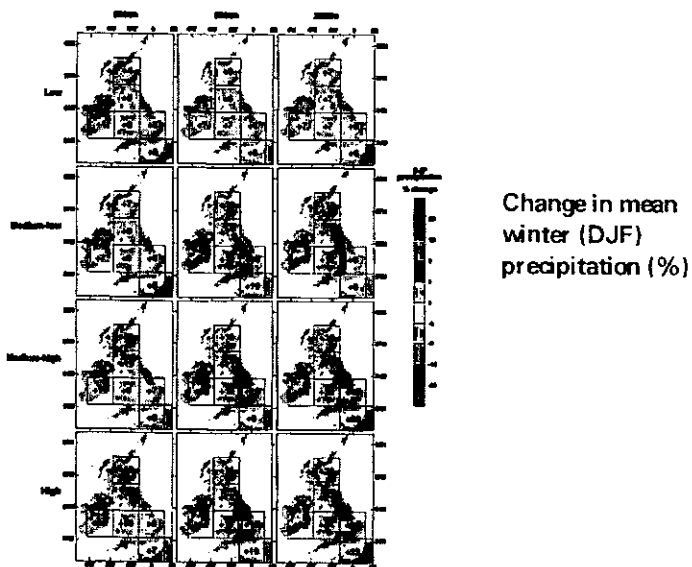
Changes in winter UK daily rainfall

■ Historical
■ 2050s
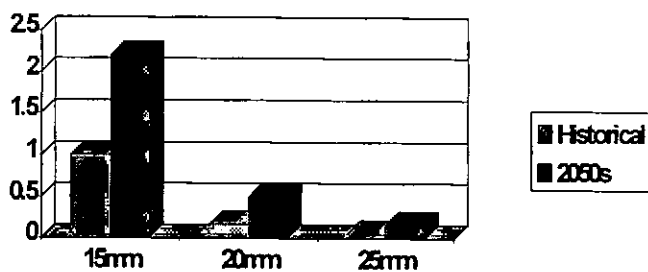
UK Climate
Impacts
Programme

Windspeed and direction, lightning

- Small increase in annual mean windspeeds, but signal is not clear
- Autumn shows greatest increase in windspeeds (Scotland: +7%, England and Wales: +4% by 2080s, medium-high scenario)
- Autumn - slightly less N/E winds, more S/W winds
- Evidence for increased gale frequency is weak, but very severe winter gales may become a little more frequent
- Lightning expected to increase (20% by 2080s)

UK Climate
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Change in storm surge frequency

Source: Hadley Centre for Climate Prediction and Research

UK Climate
Impacts
Programme
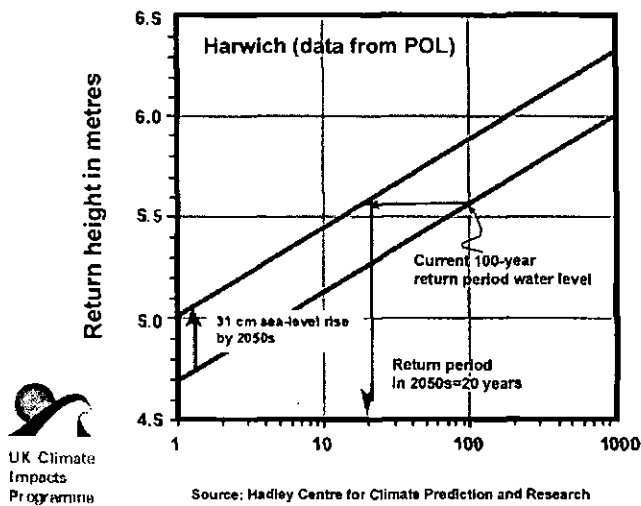
Percentage of years experiencing certain climate extremes across England and Wales for the medium-high scenario

	Present	2020s	2050s	2080s
Mean temperature				
A hot '1997-type' August	2	15	32	40
A warm '1997-type' year	6	59	85	99
Precipitation				
Summer rainfall below 50% of average	1	7	12	10
A two-year precipitation below 90% of average	12	11	14	6

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Impacts of climate change for the aviation sector

Climate change will impact on:

- built environment
- associated transport infrastructure (road, rail)
- aircraft operation
- tourism market

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Built environment impacts (UK)

- Increased risk of flooding, due to higher autumn / winter rainfall and sea level rise
- Need for better surface water drainage
- Potential water shortages in summer, especially in southern England
- Ground subsidence of properties on clay-based soils - more expensive foundations could be required for new buildings
- Property could require strengthening against potential increase in storms and high winds

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Transport infrastructure impacts (UK)

- Infrastructure close to rivers, coasts and estuaries at risk of flooding, landslides
- High winds and heavier rainfall can cause damage and disruption, e.g to overhead lines
- Road and rail can be damaged by high temperatures
- Potential benefits from less icing in winter

UK Climate
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Aircraft operation

- Higher temperatures reduce air density, so take-off payload could be restricted during hot summers
- Particularly important for airports with shorter runways (Gatwick, Manchester, Birmingham) or at higher altitudes (Birmingham, 98m)
- Wind shear (often associated with thunderstorms) may become more of a problem in Europe
- Daytime aircraft noise levels could be reduced, due to increased mixing of lower layers of atmosphere

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Tourism - health & safety issues

- Some destinations, e.g. Eastern Mediterranean, could become less attractive *in summer*, as temperature and humidity increase above comfort levels
- Heatwave in Eastern USA killed 250 (July 1999)
- Malaria could re-emerge in Spain
- Air quality in cities likely to worsen, e.g. Athens, Los Angeles
- Droughts and fires will increase - Spain lost 1.2m acres of forest to wildfires (1994)

UK Climate
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Tourism - coasts and islands

- Sea level rise and coastal erosion threatens coastal resorts and islands
- Maldives: attracted ca. 400,000 tourists in 1998, 85% from Western Europe
- Sea level rise estimated at 4-10cm per decade
- Many Maldive islands are less than 1m above sea level
- Coral reefs provide protection and attract tourists
- Coral bleaching (death) affected reefs in 32 countries in 1997-98, as temperatures rose 1-2°C

UK Climate
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Tourism - ski resorts

- Decreasing snow cover and duration may adversely affect low-lying ski resorts
- Switzerland: with temperature rise of 2°C, snow-cover will be safe only for resorts above 1500m, i.e. 63% of Switzerland's 230 skiing areas
- Survey of skiers: only 30% said they would continue coming if there is less snow
- Remaining 70% said will try to find other, snowier hills
- Norway could become more popular skiing destination

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Tourism - winners?

- Some destinations, e.g. Northern Europe, could become more attractive as fine summer weather is more certain
- Mediterranean could become more popular during autumn and winter
- Higher proportion of UK residents may be encouraged to take summer holiday at home
- Inbound international market could expand, as UK develops a more "Mediterranean" climate

UK Climate
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Future research needs

- Impacts of climate change on transport, the built environment and tourism are not well understood
- UKCIP is convening a sectoral study on transport and the built environment
- First meeting be held in spring

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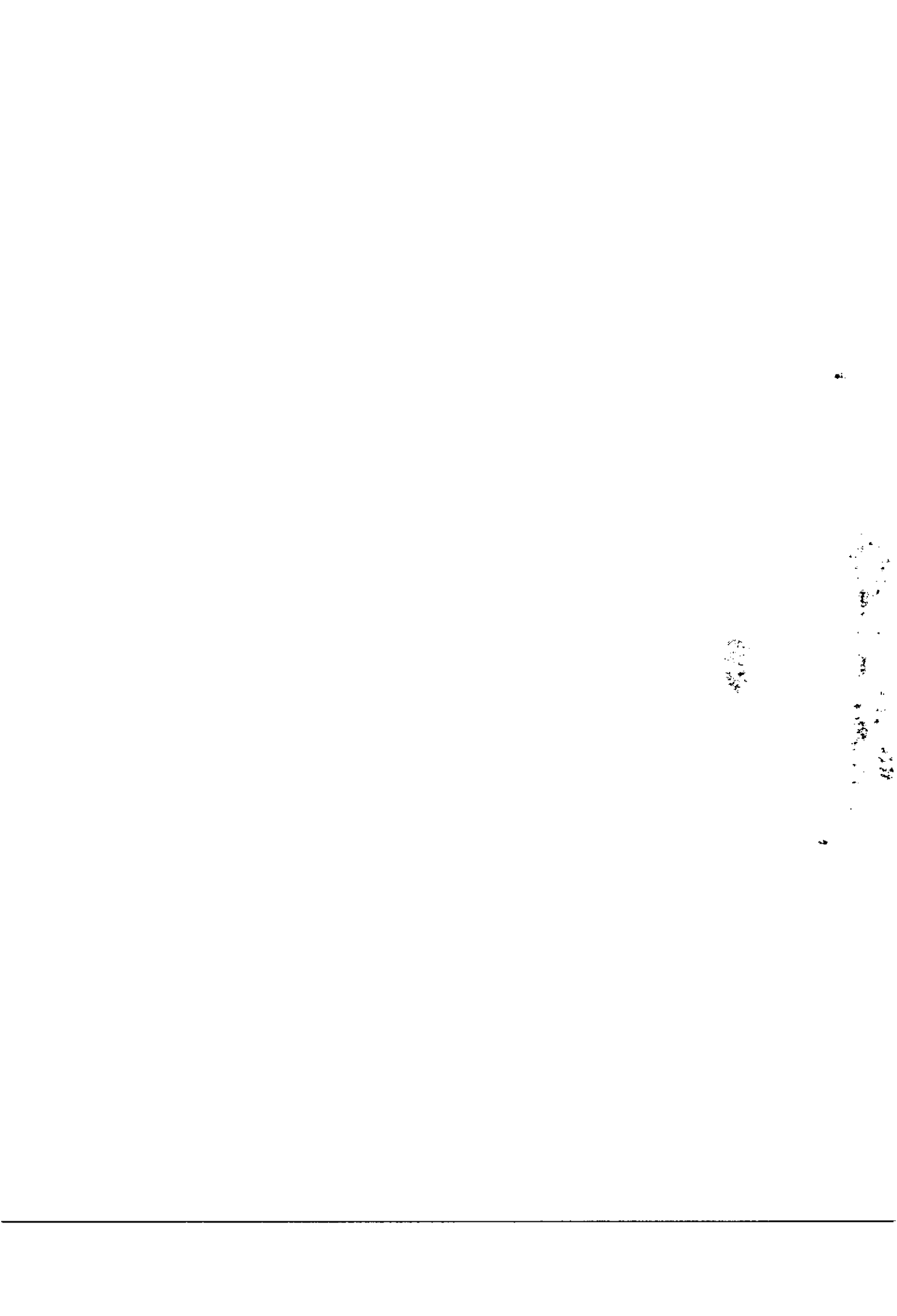
2.6.3 Presentation by Dr Tim Denne Oxera Environmental

Political and Policy Implications
of Climate Change

Dr Tim Denne
OXERA Environmental

Current Targets

- EU: total GHG emissions
  8% below 1990 levels by 2008–12
- UK
  – total GHG emissions (EU burden sharing)
  12.5% below 1990 levels by 2008–12
  – CO_2 emissions (domestic goal)
  20% below 1990 levels by 2010

- emissions from international bunkers (aircraft and shipping) are not included in targets

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Future Targets
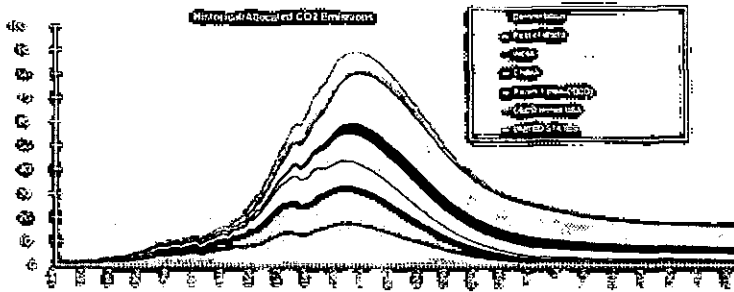
Emissions path to meet 450 ppm by 2100, cf 280 ppm pre-industrial revolution, c 370 ppm now

- need large reductions to stabilise atmospheric concentrations
- Royal Commission on Environmental Protection has called for a 60% reduction in emissions by 2050

Global Contribution of Aviation

- 0.14 GtC in 1992 (about 2% of total CO_2 emissions)
- projected growth in aviation fuel use
  - 3% per annum between 1990 and 2015
- projected growth in emissions
  - 0.25–0.27 GtC in 2015
  - 0.23–1.45 GtC by 2050
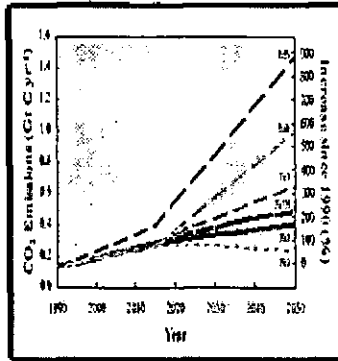
Source: IPCC Special Report on Aviation and the Global Atmosphere

UK Aviation Emissions
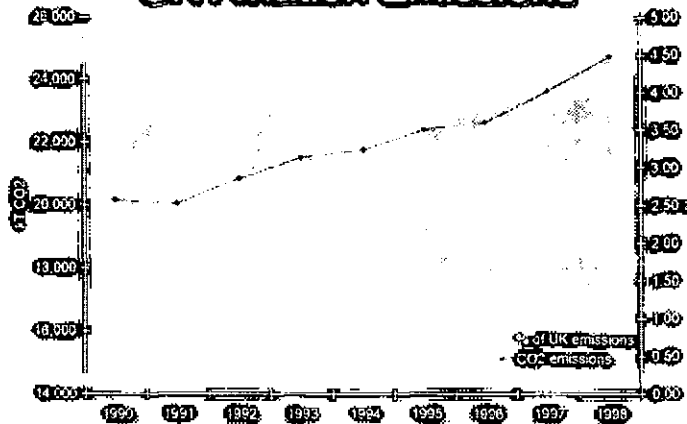
Source: www.unfccc.de

- emissions are based on fuel sales (IPCC reporting guidelines)
- predicted annual growth rate of UK air traffic: 4.0–5.3% to 2010

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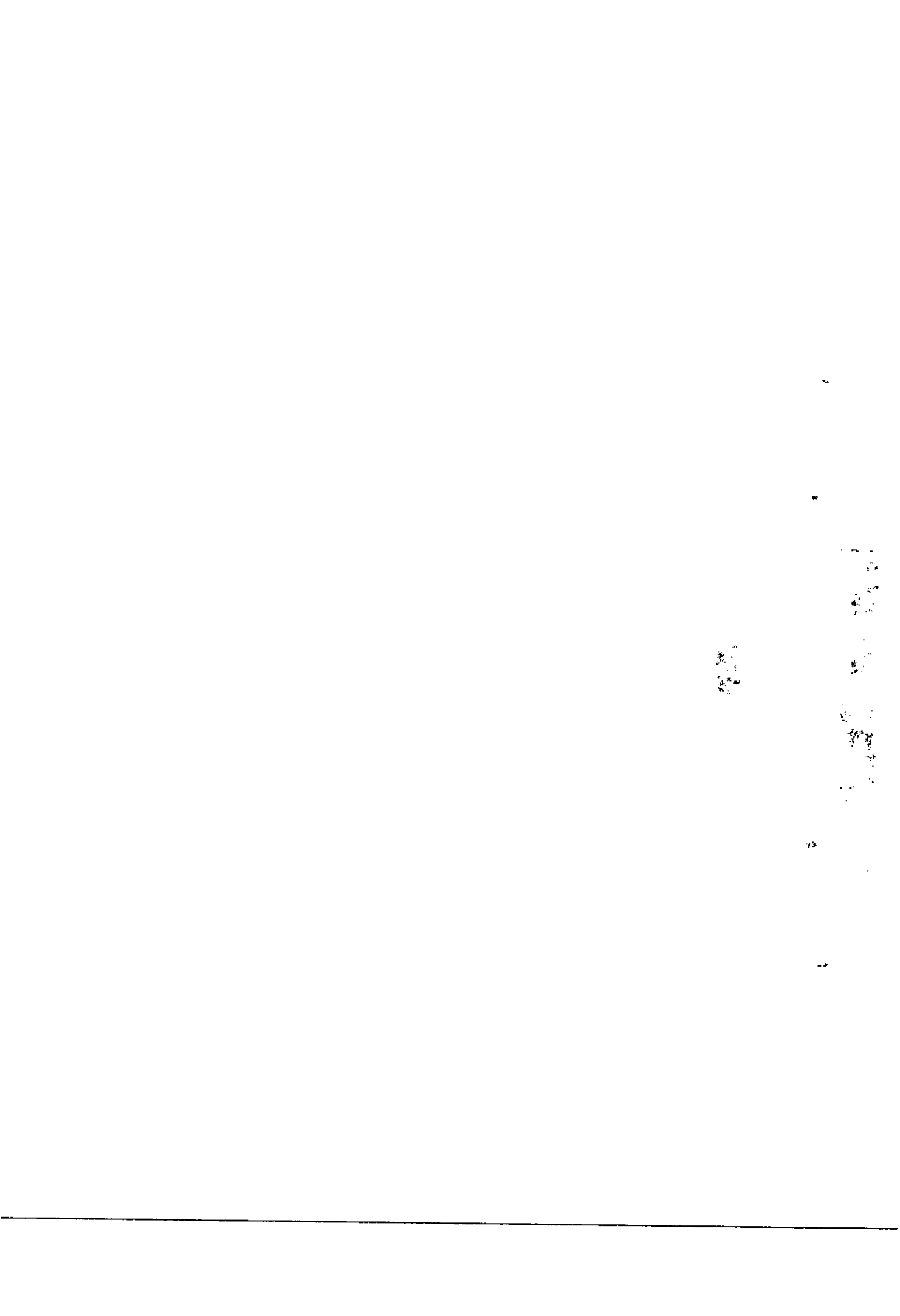
Prospects of Emissions Reduction Requirements

- failure at The Hague is only a delay to action—negotiators are arguing over details
- IPCC Third Assessment Report will give momentum—'there is new and stronger evidence that most of the warming over the last 50 years is attributable to human activities'
- Bush is an uncertainty, but Republican presidents have historically ushered in major environmental legislation
  - appears administration wants to delay COP6 Part 2 to get up to speed on issues

ICAO/CAEP Activities

- Kyoto Protocol
  - calls for an overall 5% reduction by 2008–2012
  - asks ICAO to find solutions for aviation emissions
- CAEP
  - has discussed voluntary approaches, taxes and tradeable permits
  - has agreed that emissions trading is the long-term solution, but other options are being considered in the short term

Allocation of Emissions to National Inventories

- no allocation
- by country where bunker fuel is sold
- by nationality of company, country of aircraft registration or operation
- by country of departure or destination (or shared between them)
- by country of departure or destination of passengers or cargo (or shared between them)

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Impact of Permit Price on Fuel Price

- International permit price predictions $14–220/tC ($4–60/tCO$_2$)
- a permit price of $10/tCO$_2$ ($36.7/tC) would be a 16% increase on $200/t price of aviation fuel
- for a transatlantic flight (6,000 km), the cost would be increased by $2,300

Impact of Permit Price on Flights Prices and Profits
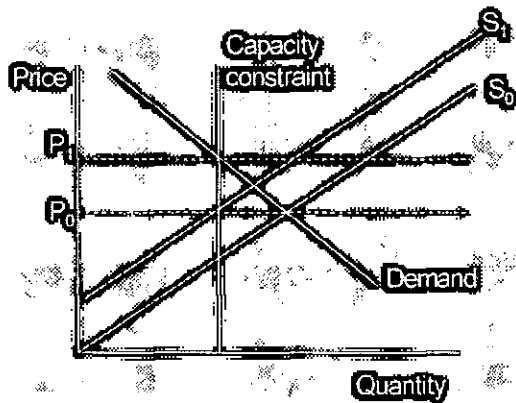
Where airports are capacity constrained, permit prices may affect airline profits rather than prices of flights

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2.7 Initial Output from the scenario planning process

1) Complete lack of backbone

Global
Aviation is not within the Kyoto process
Slow technological advance- driven by price of oil only
Hostility towards aviation - through direct action
There is no global consensus

Aviation
Aviation does not pay for its global impact
Industry resisted voluntary action to address climate change issues.
Social concern about the 'right to fly'
Sector is targeted by environmental groups (customer boycotts and investor boycotts)
There is good and bad aviation - damage to reputation

Airport
less profitable
Managing different sorts of risks
Need to attract certain airlines
less ability to invest
Need/ pressure for voluntary initiatives
Airports have been subject to protracted planning inquiries and uncertain predictions of traffic growth have made it difficult to fund investment.

2) Big Brother

Global
Aviation pays full environmental cost
Scientific knowledge develops
Global governance develops
Economic and social desperation has driven technical assistance to the developing world

Aviation
Fewer carriers in operation
Larger operates dominate
Stimulation for technical improvement - pressure on manufactures
Negative effect on developing nations- who can not keep up
There has been no real progress on voluntary controls, and no international industry co-ordinated approach to effective policy.
Heavy taxation

Airports

Need more capacity
Airports more energy aware
Still high demand for travel - but can not meet demand- demand management
More local souring of products
Airports are still viable but vulnerable to the demands of airlines
Heavy taxation
airline/ airport profitability effected

3) Virtual travel

Global

Communication technology advances
Personal concern for the environment is high
Health concerns - deep veined thrombosis and radiation- areas of public concern
World convergence demands less travel
Flying is expensive
Rail substitution
People are interested in the quality of life
Balance in life is important
People will pay for the human touch in their day to day lives

Aviation

Segmented industry
Focus on profitable passengers
Industry has a poor reputation
Developing nations ?????
Cultural tourism
Longer trips
Value travel more

Airports

Less investment
Quality and Customer care focus
Less pressure about capacity
No longer a growth stock
Diversification

4) Worst physical impact/ most global co-operation most likely

Global

Significant physical and ecological impacts from global warming e.g. Maldives under water, less species diversity, coastal erosion/flooding, storms etc.
A high degree of policy co-operation between governments and between the developed and developing worlds

The co-operative approach encourages global partnerships and keeps the economy buoyant.
Effective renewable resources have been developed
There is more political stability than today

Aviation

Demand for air transport remains high- although the views on travel have changed e.g. value travel more.
Shift in destination
Clear technical direction for the development of industry
Pressure on the aviation industry to minimise the impact of its own emissions achieved by a high degree of co-operation within the industry, and through voluntary agreements (effectively and equably)
Price of travel increased permits/ charge - for external outputs
wide spread emissions trading regime

Airports

Airports have been able to expand to meet demand, but have been required to provide mitigation for local noise and air quality emissions and a substantial reduction in private car use.
High controls and co-operation or strong voluntary agreements
Airport proactive in cutting emissions
Local communities difficult to please

5) Demand management/Regulatory change

Global

Political pressure from environmental groups or ENGO's
High CC

Aviation

Joined up government
substitution for rail
sustainable mobility is what everyone wants to become

Airports

Regulatory process is less bothered about meeting demand and more bothered about Delivering a quality experience
Major SE airports meet the needs of 'knowledge workers'

6) Personal permits

Global

An effective scheme for controlling emissions is in place, but relies upon the trading of personal emissions credits- through smart cards or personal bank account

Aviation
Air travel becomes increasingly elite- footballers and film stars, and demand is dependent upon the public's attitude. Aviation is seen as a "dirty" activity
Aviation critically compared to other forms of transport
Rail resurgence for short haul

Airport
Limited growth .

7) Aviation to blame

Global
Aviation is believed to have played a major part in bringing about climate change.
Only major carbon user
Huge pressure to develop renewable
Social concern about the 'right to fly'
Dual fuel solution being pushed for

Airport
Planning restrictions severe
congestion rules similar to road uses

2.8 The Scenarios

No backbone

Slow global policy response

Global instability

Aviation regarded as 'avoiding' its responsibilities - not in the Kyoto process

Slow technological advances

Sector target for environmental groups (customer and investor boycotts)

There are 'good' and 'bad' aviation (as some airlines and airports take voluntary action)

Airports are poor investments - less profitable, protracted planning inquiries, uncertain forecasts

Social concerns about the 'right to fly'

New Risks - environmental protesters-investment risks - staff shortage

Need to attract the 'right' sort of airline

Growing pressure on the airport for voluntary initiatives

In 2020 the US finally ratified the Kyoto protocol. However, it is still regarded as a weak and an unpolicable agreement. The lack of action in the US forced Europe to begin a programme of strong unilateral action to cut greenhouse gas emissions from Europe by 2008.

Aviation's strong industrial lobby continues to avoid any serious attempts to control its emissions. Even in Europe the sector has avoided any serious action to cut its emissions by pleading that unilateral action would be uncompetitive and result in a trade war with the US.

By 2030 this situation has resulted in a public and investor relations crisis with the sector suffering from a serious lack of credibility. Investors and some consumer groups are now beginning to boycott aviation blaming the sector for climate change. The sector has seen a growing trend of direct action campaigns against airports and airlines.

Although consumerism is a key value the travelling public, who are cash rich time poor, demand a quality service with a 'human touch' and strong environmental performance.

The sector is beginning to segment, with some airlines and airports beginning to take unilateral action to mitigate for aviation's environmental impact. For UK airports the poor image of aviation has made planning consents difficult and put them in constant battle with environment groups and, increasingly, the Government and local communities.

Big Brother

Global leadership on climate change

Good scientific understanding of the impact of aviation on the climate

Aviation has been made to pay its full environmental cost directly through high taxes and regulation

Larger operators dominate

Technical development is stimulated through pressurising manufactures

Developing world can not compete with big carriers

Government regulates airports through demand management but some new capacity has been provided

BAA Regulator given duty to protect the environment

Airports vulnerable to the demands of airlines

Public pressure and growing scientific consensus grew increasingly between 2001 and 2010 resulting in a strong global agreement to cut emissions by 2010. This agreement required the aviation sector to cut emissions through a system of voluntary agreements.

By 2015 there was little faith that aviation would deliver voluntary cuts in emissions so the European union pushed for a package of measures to make aviation pay its full environmental cost. By 2020 the industry was forced to accept these measures (a combination of tax and charges).

This regulation regime favoured modern operators with new fleets. However, the developing worlds carriers have been unable to meet the new strict noise, local air quality and emission standards in the developed world. By 2020 this lead to domination by a number of large carriers from the European Union and North America.

At the same time a number of 'rogue'

airlines set up flags of convenience for aircraft in the developing world to avoid on-flight charges and taxes on emissions.

Although some new capacity has been provided in the UK, by 2008 the Government began introducing ' demand management' policies. This resulted in the BAA regulator being given responsibility to protect the environment by 2020.

Relationships between airlines and airports are difficult as airlines are vulnerable to the demands of the dominating airlines.

Co-operation
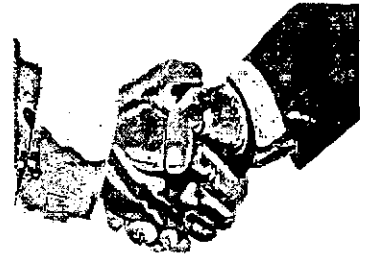
Policy co-operation with developed and developing worlds and business

Global partnerships keeps the world economy buoyant

Clear policy and technical direction to cut emissions from aviation

Price of travel increased through a voluntary permit or charging regime

Demand for air travel remains high, but travel is valued more

Airports expanded to meet demand by ensuring improvements in noise, local air quality, and cuts in private car use

Partnerships between airlines and airports have delivered strong environmental benefits efficiently

The political imperative of climate change and the trend towards globalisation has led to new opportunities and new partnerships across the globe.

The business sector, understanding the need to protect the environment and work to a high ethical standard has sought to build partnerships with other businesses, government local communities and environment groups in order to move towards sustainable development, thus avoiding draconian regulation.

A forward looking travel and tourism sector has successfully highlighted its value to society by demonstrating that this industry, key to world trade and business, can minimise its impact on emissions through a system of voluntary measures equitably and efficiently. This high degree of co-operation was first seen in 2005 when the sector published a sustainable development strategy which produced a clear direction for policy and technical development over a 20 year time horizon.

Although the price of travel has increased, as the industries green house gas emissions are managed through a permit or charging system, consumers are happy to pay the additional cost, to what is perceived as a 'trail blazing' sector moving towards sustainable development.

Airports have expanded by guaranteeing marked improvements in noise, local air quality and private car use. This has been delivered through partnerships with airlines, airports, business partners and local communities.

Virtual travel

Communication technology has advanced

Strong concern for the environment has created a resurgence in local communities and local products

Flying is expensive - rail substitution for most continental travel

Health concerns (deep veined thrombosis and skin cancer form radiation) have scared passengers

Reputation of the sector effected by poor environmental performance and health concerns

Airports focus on profitable passengers

Cultural tourism has grown- one long trip a year

Airports have a quality and care focus

There is less pressure on capacity at airports

Airports no longer a growth stock

The business has diversified

The period 2000- 2015 has seen a dramatic development of IT technology.

This has been coupled with a growing consumer awareness of social and ethical issues.

Technological development has meant that people need to travel less - with most business and shopping conducted through hologram technology.

The ability of people to work from home in 'virtual offices' resulted in people spending more time at home with their families and local communities by 2015- 2020

This renaissance of interest and time spent in the local community coupled with warmer summers, concern over the negative health impacts of flying, and the steep rise in the price of flying has meant that demand for travel has fallen sharply. Cultural tourism continues with passengers on average taking one long break a year or long breaks between jobs. Much of the travel on the European continent has been replaced by high speed trains.

From airports passengers demand a quality and caring focus. Airports are no longer a growth stock and are looking to diversify.

2.9 Findings From Implication Workshop

Implication workshop

Split into three different sections

a) Understand the scenarios in more detail
b) Understand how we may want to respond to these scenarios
c) Find any common actions that work across these scenarios

No Backbone

No backbone response

Uphill struggle to meet planning objectives- a bit like the Tobacco industry effect our profits - not necessarily - depends how we respond- less investment in the UK industry. Very reliant on the airline strategies......transfer markets may be effected as they are more mobile. The choice here is between ' incredibly green and rampant short termism. -

The way in which we are regulated would be difficult.

Our response could be - go for quality rather than quantity , be ahead of the crowds- bench mark against market leader, the choice is whether to be a winner or losers - or will it be frustrated self interest. Issue that this would involve a significant investment in the short term for what outcome??? This would give us an advantage in ethical investment and claim market advantage. We would need a young and enlightened board.

Big Brother

Under planning- there would not be much room for innovation, may not be able to charge full supply, Diversification. Heavily dependent on airline regulation , airlines focus on yields and flights. And relationships with local communities improve

should we be a unified industry
quality and yield
concentrate on flights which make most money
Not much control over the response
Supply control?
Permit control?
Regions competing under the environmental agenda
Regional global agreement
Regeneration driving investment

Co-operation
Major issue is whether or not the US is playing the game.
Engagement Danger of doing or danger of not
Influencing
Sectoral strategy

Europe v US
Can we trust people to play ball
Sell expertise to the US

Virtual Travel
Luxury
High Cost
Create a good experience for rich people
Quality experience
Make flying attractive
Some substitution

Common policy response
Airlines and manufactures
Combine as an industry / partnership - alternative fuels
Regulator - economic - issues
European quota
Strategies to reduce emissions
Build Flexibility
Leadership
Engagement in Europe
Influence Global
Sustainable development forum
Government incentives alternative fuels
Separation of airport and airline
Short term and long term
Noise dealt with at the local level
Real issue short term - discussion in the group about focusing on climate change
Focus on a charge

3.1 Briefing On Policy Interactions

Interactions between emissions traders & future of air transport consultation

Currently BAA is responding to the following consultation papers;

- UK Emissions Trading Scheme
- Air Transport Consultation

We are also looking at the proposal for an international aircraft emissions trading scheme. This is currently being considered by ICAO in order to limit the emissions from international flights.

This paper sets out the interactions of these policy developments and aims to raise questions about how we respond to them.

1.0 UK Emissions Trading Scheme

This is the first real domestic carbon trading system and as such is being promoted by DETR as a scheme that will influence the development of other domestic and international emission trading systems. The proposed trading system is voluntary. A European emissions trading scheme is proposed to begin in 2005

Emissions trading presents BAA with a number of issues which will need to be considered. Broadly these can be divided into the following two categories.

> **Business issue**-How will the system's design deal with an expanding business? Will there be any opportunity to negotiate with government on the level of an absolute cap? Will this system lead to cost effective emission reductions and a 'liquid market' in carbon permits? - *Brad Bamfield leading*

> **Strategic issue**-How should we encourage this system to deal with airlines - considering their rising emissions and more limited possibilities for emission reduction? Are their any business opportunities in aircraft emission trading for BAA?

Emission Allocation
Proposed that emissions will be 'grandfathered' using the averages of the years 1998, 1999 and 2000 as the base line for emissions.

How do you 'enter' the system?
A company can enter the trading system to trade CO_2 and or the other 5 green house gases in the Kyoto mechanism. Three methods of entry to the trading scheme are proposed;

1) **Absolute cap-** An absolute cap on its emissions based on its historic emissions (see above)

2) **Energy efficiency target or sector wide cap-** High energy users have successfully negotiated 'Climate Change Levy Agreements' and are proposing an energy efficiency target[1]. The government is going to offer additional incentives to companies with energy efficiency targets to take on an absolute cap by 2008, thus encouraging them to enter the main trading system.

3) **Project basis-** Companies could undertake a 'project' in the UK or abroad which cuts emissions. Participation via a project only mechanism would need to be negotiated separately with the Government

How this scheme relates to aircraft emissions

The Emission Trading Group[2]- have stated that they have no 'expectation' of the aviation sector taking an absolute cap on emissions at an early stage.

British Airways- Think an absolute cap is inevitable in the long term but want to sign up to it in a series of 'steps'. BA would like to participate in this UK scheme and are seeking to talk to Government about 'conditions of entry'. A key issue for BA is that the system is kept as simple as possible to allow for airlines emissions to be traded internationally.

BA may consider entering trading system on a project only basis

Aviation projects could include

- Earlier replacement of aircraft incorporating more efficient engine technology

- Reducing delays associated with Air Traffic Control - this would require a ' partnership approach' with Air Traffic control and other airline companies, raising problem of ownership of emission reductions

- Improving the efficiency or Carbon intensity of ground level operations and energy use. e.g. using electric cars in their ground based operations.

Environmental Non Governmental Organisation's- Keen to know how other climate influencing gases e.g. NOx can be factored into the trading system or dealt with separately. They would be unhappy about aviation taking on an efficiency based target (similar to UK high energy users).

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[1] Energy efficiency permit can be traded amongst similar companies. After conversion, through a *'gateway'*, it is proposed that this permit can be traded in the national emissions trading scheme.

[2] Association who helped government design the scheme - made up of business, city and DTI , DETR and the Treasury

How transport is covered by the emissions trading scheme?

- The scheme excludes all transport related emissions from reduction targets.

- Land based transport companies are also unlikely to be given an absolute emissions cap because of the implications this could have on marginal public transport services.

- There has been a suggestion that in order to facilitate airline emission reductions airports could be seen as an 'emissions bubble'. This would allow the inclusion of ground based transport resulting in emissions reductions at ground level e.g. from airline ground based vehicles.

Issues to consider

⇒ How do we want to approach the proposal of an absolute cap on aircraft and ground based emissions in the Future of Air Transport consultation paper?

⇒ How does the prospect of emissions trading interface with BAA's economic regulation?

⇒ How are we going to define 'ownership of emissions' with business partners such as retailers and airlines- there could be a problem with double counting and partners gaining from our efforts

⇒ Is there any merit in considering an airport efficiency target (based on all emissions including airlines)- would this be acceptable in the long run in the UK and/or Internationally?

⇒ How do we think airport based transport emissions should be dealt with?

⇒ How do we think airlines should be targeted for reductions- and what implications will this have for BAA?

⇒ If airlines join on a 'project basis' only, is their any potential in working in partnership with them to develop airport based projects?

2.0 Aircraft Emission Trading

Aircraft emissions trading is likely to be recommended by ICAO as the most effective economic instrument to limit or reduce emissions from international aviation. It is expected that such a system should be up and running by 2008 (the start of the first Kyoto commitment period). However, some observes believe that the industry will resist the implementation of a trading system until the second Kyoto commitment period (post 2012).

In the interim the European Commission is proposing an en-route emissions charge (with revenues going to mitigation) of all airlines flying in European Air Space. This is likely to be strengthened in 2008 if an aircraft emissions trading regime is not adopted.

There has been little work, and no agreement, on the detail of aircraft emissions trading system. The following scenarios have been suggested.

Open emissions trading (e.g. with other economic sectors/ companies)

Allocation of emissions: Either to individual nations or to an international aviation body. Allocation to nations would allow individual governments to negotiate aviation reduction targets with the industry. Aviation emissions could then be traded within a national emission trading system. If emissions are not allocated to nation states international aviation will develop its own emission reduction targets.

System for holding and surrendering permits: National Governments will be responsible for allocating aviation permits to either fuel providers, airports or airlines. There may be some competitive advantage of permits being allocated to airports. This would effectively mean that BAA was responsible for dealing in emission permits for ground based, airline operations and 50%[3] of emissions from flights to and form BAA airports

Advantages of this could include

- Control over the market in emissions
- Enable profit making by the trading of permits- with slots? (market of rising demand and fixed supply- government may hold some permits back to protect 'new entrants')
- Prevent anti- competitive behaviour from airlines
- Control over any 'project based mechanism' or cleaner development mechanism that would allow emission reductions projects in the developing world (under Kyoto agreement such projects could account for up to 40- 50% of emission reductions). Under this system emission reductions made on airports - which could include ground based vehicles - could be traded to airlines or on the open market.
- Reduce likely *double counting* of emission reductions e.g. an airline occupied airport buildings where emission reductions have taken place by BAA at point of source (by investing in renewables for example)

Disadvantages of this could include

- Likely to be a net importer of permits as we expand (T5) and emission reduction targets become more taxing?
- Issues of transparency from airlines and regulatory perspective

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[3] This is the figure proposed to divide up the emissions between departing and arriving airports

- Effect relationships with airlines
- Bureaucracy/ measurement and verification

Verification
Any trading body would have to demonstrate that at the end of each commitment period it had sufficient permits to meet its reported emissions.

Holding and surrendering of permits
Both Airlines and fuel providers would like to control the market of international and domestic aviation permits.

Closed Emissions Trading
This is the least flexible mechanism and will not allow emission reductions to be met by trading with other sectors of the economy.

Closed emission trading could result in anti- competitive behaviour by the airlines.

Issues to consider
⇒ Are any of these emission trading scenarios likely to result in anti-competitive behaviour by airlines? If so how should this be dealt with?
⇒ Is there any realistic business benefit in allocating emission permits for aircraft to airports and how realistic is this scenario?
⇒ How involved do we need to get in the airline emission trading issue and through what mechanism?
⇒ If 50% of all international aircraft emissions flying to or from the UK are allocated to national inventories (significant amount) is this going to make the UK government more interested in aircraft emissions?
⇒ Do we need to be concerned about the trade off between noise, NOx and efficiency?

Future of Air Transport Consultation

How is Climate change dealt with in the consultation paper?

- Climate change (in general) is a headline issue in the white paper consultation

- How aviation should meet its *environmental cost* is a concurring theme throughout the paper. Climate change impacts of aviation are not currently factored into the cost of aviation therefore the government will welcome responses on this issue.

In addition two questions in particular seem relevant to both aircraft and ground based emissions.

- To what extent should the government rely on regulation to influence noise, emissions and other environmental effects of aviation, and to what extent are economic instruments or voluntary agreements more appropriate? - *main question and environmental effects question*

- In the long term, where should the UK concentrate its efforts in the international negotiations on environmental impacts?

Stakeholders

The climate change impact of aircraft is seen by many stakeholders as an outstanding concern that needs to be addressed. Potentially this is one issue where the Government may need some 'assistance' in getting its strategy 'right' from a UK business perspective as well an environmental/political point of view.

Risk profile

If the airlines do not appear to be engaging wholly with the climate change agenda the issue of aircraft emissions, in particular, has the capacity to become very 'political'

Issues to consider:
⇒ How far do we want to go in shaping the governments agenda on the global impacts of aircraft emissions?

⇒ How do we want deal with ground based emissions and possible emission caps in the Future of Air Transport consultation?

⇒ What are the risks associated with both UK emissions trading and aircraft emission trading systems to BAA?

3.2 Briefing Oxera Paper On Aviation And Emissions Trading

Oxera Paper on aviation and emissions trading

1) Demonstrates a clear link with the way we are regulated and the impact of Emission Trading. Emissions trading should not have a major impact on BAA profits as long as the impacts are anticipated and the system remains constrained

2) Result in 10- 20% increase in aviation fuel

3) Only practical means in the short term for the aviation sector make a contribution towards limiting emissions.

4) Concluded quite likely to have an established emissions trading after 2012 and possibly before for the first commitment period (2008-2012)

5) Allocation of emissions to national inventories will be the next big issue - possible allocation methods considered are; are a) no allocation and kept within ICAO b) Allocation according to country bunker fuel sold in c) Nationality of airline d) country of arrival or departure of airline d) country of departure or arrival of passenger or cargo

6) Unlikely to have a very significant downward impact on slot demand

7) Concluded that there is no significant BAA profit advantage in the airports running the market

Option for BAA in relation to Air Transport Consultation

Option	Reputation	Impact on profits
Support the introduction of ET- early entry of international aviation to the Kyoto Protocol commitments	BAA ahead of most companies in environmental stakes	• No impact on profits
Oppose introduction of ET	Reputational risk	• Few financial advantages
Lobby to have a role in ET - Run market or be responsible for holding and surrendering permits	No Reputsational Advantages	• Distributing permits to airlines is a potential source of revenue for BAA - not likely to be realised under present capacity / regulatory constraints • BAA might choose to take on the responsibility for holding and surrendering permits. Potential profitable activity for BAA if; it believes that it can 'play the permit market' better than others, or if it has access to low-cost emission reductions that

		are not predictable by the regulator
	·	• Realistically no real financial benefits
Proactive steps- BAA could purchase permits or offsets to cover the emissions from aircraft - if they were classified by the regulator as legitimate expenditure	No major reputational advantages	• This approach has some downside risks in addition to the possible financial costs. • Many of the offsets or low-cost carbon permits available currently are not regarded as particularly credible by much of the NGO community.

3.3 BAA's Response To The Government's Consultation On The UK Emissions Trading Scheme ·

BAA response to the proposed UK's Emission Trading scheme

In response to the Government's proposed UK emissions trading scheme we have the following broad points.

• BAA welcomes the opportunity to respond to this consultation as we feel that emission trading has an important role to play in the UK's developing climate change strategy. We are also pleased to note that the Government is keen to align its scheme with that of the European Union in order to facilitate a European and an international trade in permits.

• Climate change is a strategic issue which we take seriously. We have set ourselves challenging targets to cut our emissions both in absolute terms and per passenger, using 1990 levels as a baseline We have already discussed these targets and our approach directly with the DETR and we are currently in discussions with BRECSU about how they might support our corporate objectives to reduce CO2 emissions associated with the energy consumption of airport buildings.

Our climate change programme is based on the following principals: 1). improved efficiency of existing facilities; 2). Challenging CO2 targets for new facilities; 3). the purchase and or development of new renewable energy capacity and 4). on-site generation of renewable energy e.g. through photovolotaics. We seek reassurance from Government that this scheme will incentivise the adoption of these principals rather than penalise early action.

• The development of a UK emissions trading scheme may give us an additional method to deliver cost effective emissions reductions in support of our climate change strategy. Therefore, we would welcome the opportunity to be involved

in the development of the scheme and the evaluation of its potential application in the service and specifically the airport sectors.

Although we support the drive to reduce Green House Gases emissions, it must not be at the cost of UK economic growth or risk the UK's international competitiveness.

Due to a lack of detailed analysis of the implications of trading, we are not in a position to respond in full to the detailed question posed by the DETR but we have a number of comments on the scheme's design:

- Calculation of targets - Aviation is vital to the economic sustainability and competitiveness of the UK and is predicted to grow accordingly. In doing so this will create an obvious need to develop additional infrastructure, a trend which is acknowledged in the Department's recent consultation on "The Future of Aviation". As it stands this scheme could severely restrict the ability of certain industries to grow and enter new markets. We therefore would like the Government to consider and clarify how the scheme could be adapted to permit a recalculation of the emission base line and reduction targets and how absolute caps could be applied in the context of major new developments in infrastructure. We would like to discuss the particular circumstances relevant to airports and emissions trading directly with DETR, including representatives from the Airports Policy Division

- Application to service industries -As it stands the scheme presents significant issues concerning the ownership of permits and emissions for the service sector. There is also a crucial difference in the amount of control which a manufacturing business and a service based business may have over its energy consumption- both in the ability to predict this consumption on a year on year basis and the ability to control its use. Further many opportunities available to the manufacturing sectors to reduce emissions are unavailable in the service sector.

In addition the customer requirements are also very different between the two sectors - For example in the case of BAA , which operates larger scale facilities with

many tenants on its site we have either very little or no influence over the amount and way in which energy is used by tenants on the premises.

- Renewable energy- Through the emissions trading scheme or through the Government's broader climate change strategy the Government should consider how to incentives companies to invest in new renewable energy capacity.

- Cap and Trade system - The current proposals suggest that growth must be "funded" by reducing emissions from existing assets, substituting "green" energy for existing supplies or by trading with other Companies. These methods are "non-incremental" in that they employ financial and human resources into activities that may not add to the profitability of the organisation. It is vital that the short term effects on industry competitiveness and employment are understood for each business sector and that where necessary measures are taken to protect these during the transition to a low emissions economy to achieve the full objectives of sustainable development.

We note that Japanese industry is firmly opposed to Cap and Trade citing fairness, difficulties in administration and requiring the imposition of stringent financial penalties as impediments to a workable system compatible with economical growth. They also make the point that Cap and Trade is inconsistent with a voluntary scheme.

It is very important that businesses in the UK are not be disadvantaged by adoption of methods and controls that are more stringent than our international competitors. We must strive to achieve our national reduction targets while maintaining a level playing field with schemes adopted by other countries.

We therefore conclude that different systems, for example "baseline and credit", should be considered by the Government as they are more compatible with the Service sector, sustained economic growth and international competitiveness.

- Trading Markets

A sustainable trading market requires liquidity and relatively stable prices however, we have identified several points in the current proposals that will adversely affect the viability of the developing market.

> Buyer Liability- this system would substantially increase the risks to the market participants and would deter buying from "unknown" sources. Seller Liability is, by contrast, a well understood normal business process that would allow the market to develop quickly. This system would need greater external policing with legal or voluntary penalties attached.

> Verification - the proposed verification process needs to be streamlined on the grounds of cost and the proposed length of time taken to verify permits.

> Financial reporting- it is unclear how the trade in permits should be treated in financial reports. Whether the permits should be recorded as realised and unrealised gains and losses, or mark-to-market. This uncertainty will further undermine the market.

- Financial assistance - We are unclear why bidding for the initial financial incentives is being proposed as is costly to complete and difficult to manage. Rather, the incentive available should be used to compensate all businesses, irrespective of size or sector, for the set up costs of administering the scheme. This could be achieved on a weighted average basis which would be transparent, equitable and have little overhead cost involved.

- Annual Issue of Permits- It is not clear from the proposals how the future permits will be issued. Bidding on an annual basis for permits would be both costly in terms the level of bid and in overhead resource involved in the process. An

unpredictable market such as this will make it harder to forecast the concessions under which we will trade in the future, increasing the risk to businesses.

We suggest that the Government considers allocating permits free of charge in line with agreed reduction targets and that excess emissions, if not balanced by trading, is penalised in a defined structure. The penalties raised could be re-circulated back to the participants who have achieved or improved on their target, possibly using a weighted average system.

In conclusion it seems that this scheme will need to be significantly adjusted in order to gain acceptance within the service sector. Accordingly we recommend that a separate working group of the Emissions Trading Group (ETG) is set up to develop a workable and legitimate trading scheme for the service sectors. This would allow the Manufacturing sector businesses to join from April 2001 and Service sector businesses to join from April 2002.

We would very much like to talk to you about these comments in more detail in the near future.

Richard Everitt
Group Planning and Compliance Director
January 2000

3.4 Communication with stakeholders: meeting with British Airways

BAA's position on international aircraft emissions trading

We welcome British Airways' role in helping to move the airline community forward on the need to develop an international trading scheme for aircraft emissions. For BAA to support any particular scheme it would need to address the following issues;

⇒ The design of an aircraft emission trading scheme should not reward or encourage anti- competitive behaviour by airlines either through a system of 'grandfathering' or auctioning of permits.

⇒ The scheme should be designed so it is effective in stimulating research into reductions of emissions at source, actual reductions emissions during operation and investment in new technology.

⇒ It is important that the scheme is designed transparently with input from regulators, industry and the environmental community to ensure that it is seen as a genuine proposal to cut emissions and gains the widest acceptance possible amongst stakeholders in order to facilitate future growth of the industry.

⇒ In relation to the above point, if the scheme is initially based on CO_2 emissions alone then work should continue to evaluate and develop a NO_x standard at cruise level through ICAO. Development of the scheme should also complement work on local air quality and noise standards. For example, some stakeholders have suggested that whilst we are still uncertain about the climatic impact of NO_x one possibility would be to consider incorporating its potential global impact into landing charges, along with its local air quality

impacts. Revenues could then be used to incentivise improvements in performance and for mitigation.

Richard Everitt

Group Compliance and Strategy Director

February 2000

(written by Emma Noble)

4.1 Presentation to the Contract with the Community Board December 2000

Aircraft Emissions and Climate Change - *understanding the issue/politics and defining our position*

Emma Noble
Group Planning and Environment

BAA

A few facts

- Aircraft emissions currently responsible for around 2- 3.5% of global warming

- Considerable uncertainty over future impacts depending on:
  - growth rates
  - technical improvements
  - fleet mixes
  - contribution of contrails

- Estimates range from around 5.6% by 2050, with one scenario as high as 16%

My Objectives

- To support BAA in addressing risks posed by climate change agenda *(.....now central to Air Transport Consultation agenda)*

- To complete a work based doctorate - accredited by Middlesex University

- Define a policy position

Management

- Internal steering group- Alan Osborne, Mike Toms, Lynne Meredith, Kathryn Barker (reporting through to Richard Everitt)

- Externally- Middlesex University

Process

- Brief analysis of the issue
- Scenario planning exercise
  - 30 1:1 interviews
  - Workshop (22 people- internal and external)
  - Implication workshop - internal
- Decision matrix

Who am I talking to?

Key experts and opinion formers from:

- Industry
- Government
- Economists
- Environmental Groups
- BAA internal

What have they been saying?

" There is no question in mind that
climate change could get sensationally
political"

Dieter Helm Oxera

What have they been saying ?

" Looking forward, the industry will only
have themselves to blame if things go
wrong for them"

Mike Rossell - The European Commission

What have they been saying ?

" Currently this is one of the biggest risks
facing BAA - certainly one of its biggest
challenges........you need to push for
some serious work on alternative fuels
by 2010"

Paul Eikins - Director of Forum for the
Future

What have they been saying?

*"You [BAA] are doing really well on the
local impacts of your operations, but
what worries me is who is looking after
the global impacts"*

Dr Caroline Lucas - MEP

What have they been saying ?

" It would not surprise me if the politics in
2010 is split by the environmental
votes"

DeAnne Julius- the Bank of England

What have we been saying?

...the environmental challenge is to address the
contribution of aviation to climate change,
bringing it within the Kyoto agreement to
reduce greenhouse gas emissions"

Mike Hodgkinson - Future of Air Transport
Conference 12 December 2000

Interfaces

- UK emissions trading scheme
- Air Transport Policy Consultation
- Slot Allocation?
- BAA climate change & air quality strategy
- SERAS outcome
- Kyoto/ ICAO
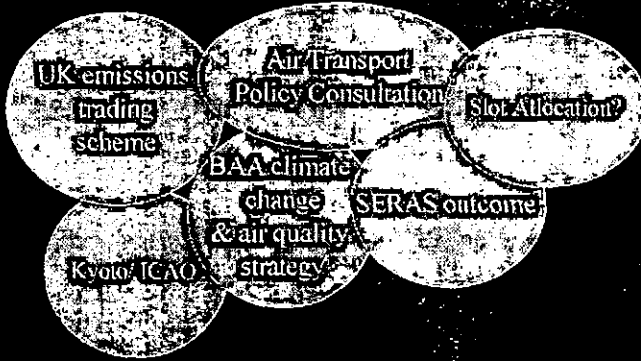
Deliverables

- Influence agenda through informed responses to

  initiatives such as:

  - Air transport consultation
  - UK emissions trading regime
  - Sustainability frameworks and audits relevant to large scale planning applications

- Decision matrix to guide BAA policy positions

- Summary report

Air Transport Consultation (20% of the questions are relevant to "emissions"!)

For example:

1. "To what extent should the Government rely on regulation to influence noise, emissions, and other environmental effects of aviation, and to what extent are economic instruments or voluntary agreements more appropriate?"

2. Where should the UK Government concentrate its efforts in international negotiations on environmental impacts?

Issues for the CwtC Board

Does the Board:

a). support the process and deliverables identified for this work?

b). agree to continue to act as a sounding board to assist with its progress?

Aircraft Emissions and Climate
Change - *understanding the
issue/politics and defining our
position*

Emma Noble
Group Planning and Environment   BAA

My Objectives

- To support BAA in addressing risks posed by climate change agenda *(.....now central to Air Transport Consultation agenda)*

- Internal steering group- Alan Osborne, Mike Toms, Lynne Meredith, Kathryn Barker (reporting through to Richard Everitt)

Stakeholder positions
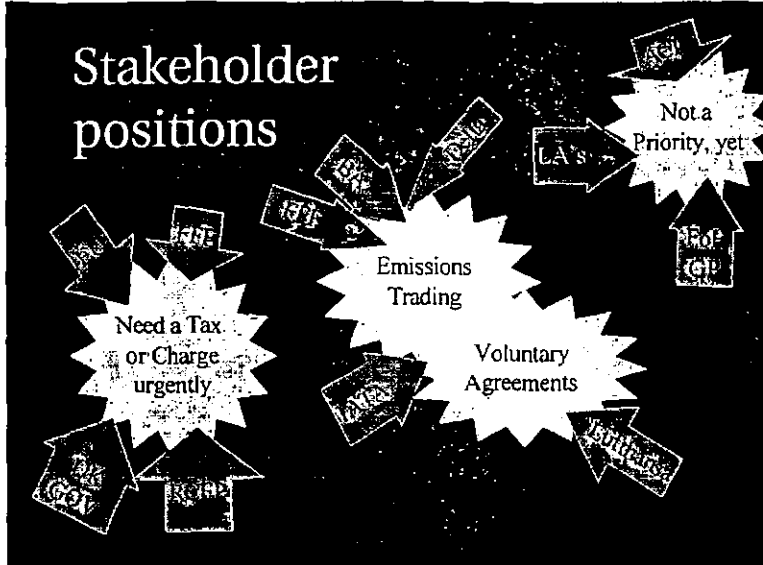
Not a Priority, yet

Emissions Trading

Need a Tax or Charge urgently

Voluntary Agreements

Process

- Brief analysis of the issue

- Scenario planning exercise
  - 30 1:1 interviews
  - Workshop (22 people- internal and external)
  - Implication workshop - internal

- Decision matrix

Who am I talking to?

Key experts and opinion formers from:

- Industry
- Government
- Economists
- Environmental Groups
- BAA internal

Some possible interfaces
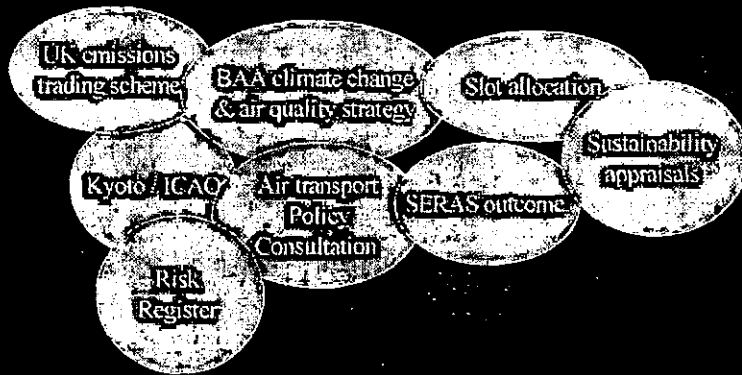
Air Transport Consultation (20% of the questions are directly relevant to "emissions" !)

For example:

1. "To what extent should the Government rely on regulation to influence. noise, emissions, and other environmental effects of aviation, and to what extent are economic instruments or voluntary agreements more appropriate?"

2. Where should the UK Government concentrate its efforts in international negotiations on environmental impacts?

Scenarios

Scenarios

- *Aircraft emissions and climate change- what does the future look like for aviation, airports and their development?*
- Don't predict the future ..... but issues are discussed and planned for
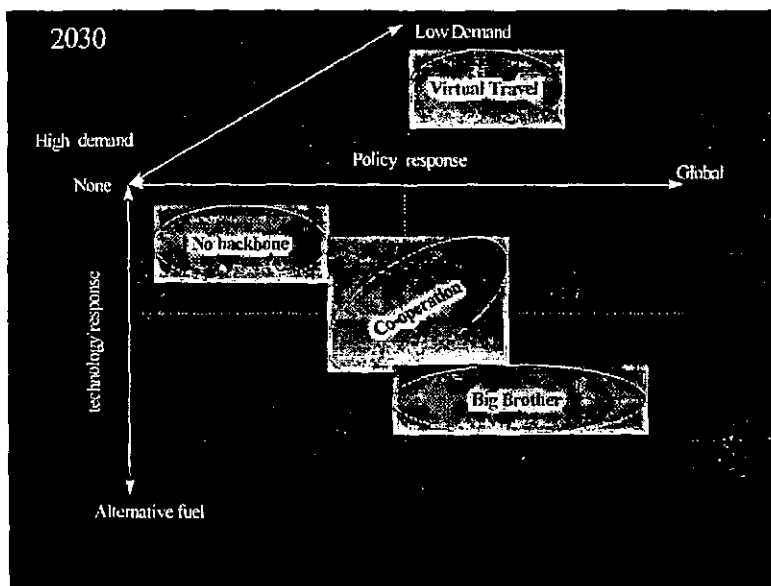
Quick conclusions

- Consensus - climate change is a reality
    - Public concern
    - Policy response
- Each scenario demonstrates change
- Suggest some industry reaction

No Backbone

- Markets differentiate
- Boycotts \ Direct Action
- Managing 'different' sort of risks
- Poor investments, uncertain forecasts
- Protracted planning enquiries

Big Brother

- Made to pay full Environmental cost
- Draconian taxes/or permit system
- Airline profits affected
- Large operators dominate
- Demand management

Virtual travel

- No growth
- 'local'
- Health/ Env concerns
- Focus on profitable passengers
- Substitution / trains
- Business diversified

Co-operation

- Some global leadership on climate change
- Partnerships
- Pays Environmental cost with flexibility
- Travel valued more/ Good reputation
- Expansion= Noise/ Local air qualify/ car use
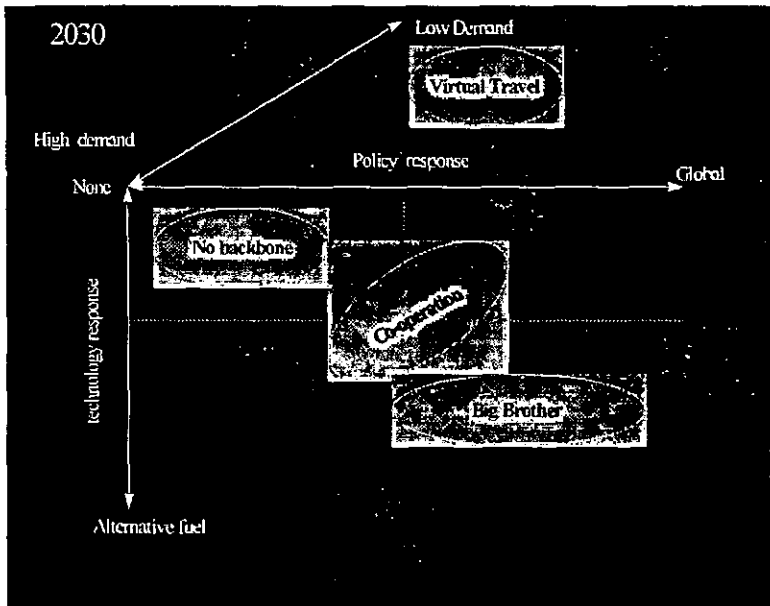
Next Steps

- Implementation workshop on Friday
- Discuss risks and benefits and possible action
- Decision matrix

Issues for the CwtC Board

Does the Board:

a). support the process and deliverables identified for this work?

b). agree to continue to act as a sounding board to assist with its progress?

c). need any additional information

5.2 Presentation To Participants Of Risk Workshop

Risk Workshop
The outcomes of the Scenario
Planning Workshop
Emma Noble
April 2001

No Backbone

"This is most like today........ meeting
planning objectives is an uphill struggle- as we are viewed a bit
like the Tobacco industry. The choice is between being green
or rampant short termism. There would be some growth in volu

-Benchmark against market leaders
–Quality rather than quantity
–Enlightened board
–Need to influence airline strategies
–Economic Regulation needs review

Big Brother

*"This leaves us with little room for innovation, we
are heavily influenced and dependent on airlines strategies
and regulation. We have very little ability to influence."*

- Focus on most profitable flights
- Quanity v Quality
- Business diversification
- Possible market dominance- if one step
ahead of the game

Co-operation

*"There is a risk of engaging and the risk of not engaging- it
is heavily dependent on what the US do and whether
the airlines play ball"*

- Develop common objectives and priorities
- Develop a sustainable development sectoral
strategy
- Develop an 'influencing strategy'

Virtual travel

*"This scenario is a return back to the 1920's where flying
was a luxury for an elite group"*

- A quality strategy
- High cost and provide a good experience
- Diversify

The common ground within scenarios

Short v long termism

Diversification

Economic Regulation

Partnerships

Tied to Airlines

Quality or Quantity
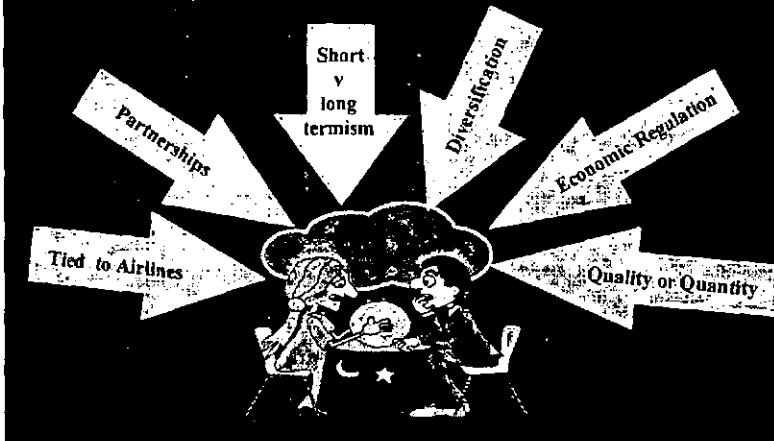
Possible Action- (long term)

Industry wide approach
    Joint objectives
    Partnership Airlines and Manufactures
    SD forum

Noise v Climate change
    Focus on climate change
    Research the implications
    Local air quality?

Regulator
    Understand the future pressures of Env costs
    Flexibility

Current policy context

Charge ← Explore ← Gov ENV Groups ← Unsure ← Emission Trading ← Under certain conditions → Airlines

IATA
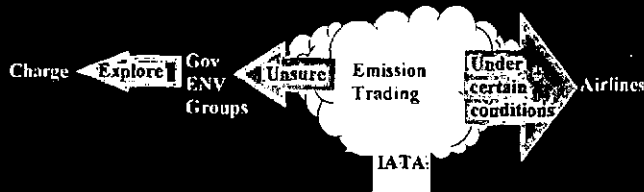
Action - short term

- Oxera - no major business opportunities

- Air Transport Consultation
    - Develop scenarios
    - Government need to be clearer about priorities
    - Charge/emission trading system focus on creating incentives for technological development
    - Noise managed more appropriately - land use
    - Possible global charge as part of landing fee
    - 'Brown' and 'Green' slots
    - RND levy

5.2 Policy position matrix

Possible BAA options for long term policy positions and impacts of policy position on our relationships with stakeholders

BAA Policy option	Impact on Technical improvements	Impact on Airlines	Impact on Regulators		Impact on / response on Environment Groups
Focus influence on Air Quality and Noise only	Difficult to make technical improvements on all three as engine manufactures are at the limits of physics. Will make some technical improvements on noise, NOx and engines efficiency - but it won't deliver a technology 'step change'	Airports continue to send signal that climate change is not a priority. Airlines left to 'juggle' the noise, local air quality and climate change priorities with manufactures and regulator.	Regulators happy if airlines manage climate change emissions. BAA would need to evaluate any business risk of airlines response	Regulators unhappy if airlines do not manage climate change emissions. BAA would need to evaluate any business risk of regulator response More likely to enforce draconian regulation	Environmental groups divid local and global issues. Likely to say that not enougl improvements have heen ma any of the key environmenta issues (e.g. noise, Local air and climate change). Risk, In the medium term, th groups will focus their attent aviation. BAA would not be to demonstrate leadership on

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				climate change issue
Focus on Climate Change and Air Quality- keep a holding position on noise.	Could help deliver improvements on engine efficiency and air quality	Send a clear signal to manufactures and airports that climate change and air quality are a priority.	Need a robust and publicly acceptable alternative to managing any increases in noise e.g. land use policy. Help focus regulators on emissions from aircraft. BAA is aware of and can influence developing policy on climate change and aviation	High risk of evoking respor single issue noise groups as seen to be back tracking on Help to demonstrate to campaigners that BAA take: emissions agenda seriously
Focus on Climate Change, Noise and Air Quality	Difficult to make technical improvements on all three as engine manufactures are at the limits of physics. Will make some technical improvements on noise	Help engage airlines in climate change agenda. Reinforce	Ensure that airports / BAA have an input into climate change policy making. BAA is more aware of developing policy and is able to influence this globally or within	Seen as being more proactiv environmental groups.

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	NOx or engines efficiency - but it won't deliver a technology 'step change'	message to manufactures that they must make progress on all three	Europe.	
Advocate a Sustainable development forum or the development of a sector wide sustainable development/ climate change strategy (in conjunction with other bodies e.g. Scan UK / Greener By design/) to help develop sector wide objectives.	Help prioritise issues and provide a clear technical direction for the sector.	Help engage more airlines in climate change and air quality agenda and define long term strategic objectives for the sector. Identifies area where sector needs to work more closely.	Regulators asked to form 'own' views on their priorities for the sector. Engage regulators in discussion about a range of local, national and international policy tools.	Engaged in process, may ga broader understanding of d in managing different agenc BAA seen as proactively facilitating/ influencing deci making. Some environmental groups not co-operate for fear of 'gi wash'

Develop/ advocate an alternative aviation forum or radical 'air frame' design change	An alternative fuel or radical design changes could make improvements on NOx. Noise and engine efficiency. However, this would be costly and is likely to require radical changes in airport infrastructure	Send clear signal to manufactures and airlines that this is on our agenda	Help focus regulators onto how to create incentives for research and development	Gain support of environmei groups. They will continue pressurise us to make improvements in existing technology.
Advocate Emissions Trading	Likely to incentives technical improvements	If done sensitively this should be accepted by the airlines.	Help focus regulator on need to address issue of climate change by a flexible mechanism	Supportive but will need to hard to demonstrate that em trading is workable
Advocate a Tax on Aviation Fuel	Likely to incentives technical improvements	Will put BAA at odds with the airlines	Add weight to growing call from regulator to tax aviation fuel	Supportive

BAA Policy option	Impact / response on Investors	Impact /response of the Public	Commentary
Focus influence on Air Quality and Noise only	Risk, if airlines do not manage issue successfully, that investors will become nervous and believe that BAA is not effectively managing the external agenda	Likely to see increased public interest and concern about BAA's position on aviation's contribution to climate change.	Reputational risk of not being seen as being proactive Very reliant on the airlines and their ability and commitment to controlling climate change impact of their operations.
Focus on Climate Change and Air Quality- keep a holding position on noise.	Need a robust and publicly acceptable alternative to managing noise in order to maintain trust of investors and	Need a robust, understood and publicly acceptable alternative to managing noise. High risk of provoking a high profile response from local	A risky strategy- not recommended in the short term. It would help manufactures deliver more efficient planes. However, noise would need to be dealt with successfully by other means. This policy would need to be Government lead

	shareholders	communities	
		In a position to be proactive about external communications on the air quality and climate change agenda.	
Focus on Climate Change, Noise and Air Quality	Seen as managing all risks	Maintaining pressure on all three issues will demonstrate our commitment to improvements on all three agendas.	In the short term this is a helpful position. However, it is unrealistic to expect manufactures to deliver improvements on noise, climate change performance and local air quality within current technology. Some 'trade off''s' will need to be made at some stage.
Advocate a Sustainable development forum or the development of a sectoral sustainable development/ climate change strategy (in	Managing risk. Could be accused in 'taking the eye of the ball' if not communicated	If public are involved and consulted with this could help raise the profile of the aviation sector as a 'good neighbour' and responsible 'global citizen'	Could be a good option. May come out of Government's white paper on the Future of Air Transport. Would allow BAA to influence long term objectives of the sector and my help overcome

conjunction with other bodies e.g. Scan UK / Greener By design/) to help develop priorities for the sector and sector wide objectives.	effectively and too heavily resourced		environmental concerns by seeing aviation in its widest context of 'travel and tourism'.
Develop/ advocate a safe alternative aviation forum	Managing risk. Could be accused in 'taking the eye of the ball' if not communicated effectively and too heavily resourced	Will be concerned that all issues are being managed. Will want to see continued improvements in today's operations as well	The most radical option. This could be best done though a sustainable development forum. Would bring public relation benefits and give the sector a kick start in thinking about alternative fuels. Incomplete scientific understanding of atmospheric chemistry may prevent speedy progress on identifying suitable alternative fuels.
Advocate Emissions Trading	Likely to be supported if communicated	Should be supportive if cost of travel does not increase markedly	

	responsibly		
Advocate a Tax on Aviation Fuel	Non supportive	Mixed	High risk option to BAA. An aviation tax would be difficult to introduce and would be deeply unpopular with airlines

6.1 Business Case for Policy Position

PAPER FOR THE CONTRACT WITH THE COMMUNITY BOARD

Presented by Group Airport Planning and Environment

12 April 2001

BAA policy on aircraft emissions and climate change

Introduction

1. This paper seeks the Board's endorsement of :

   - the principal recommendations of a scenario planning exercise on aircraft emissions and climate change;
   - the BAA policy position recommended as a result of that exercise; and
   - the incorporation of that policy position in the 2001 annual report.

Background

2. External stakeholders are increasingly judging BAA on how it uses its influence and proactively manages the broader questions associated with the sustainability of aviation. For example:

   - In a recent presentation to Scottish Widows BAA was asked to describe how it uses its influence on airlines to encourage them to improve their environmental performance;

- In its commentary/review of BAA's previous two annual reports, Forum for the Future has commented that BAA should have a stronger position on aviation's contribution to climate change; and
- In the Government's consultation on the Future of Aviation, 20% of the questions posed were directly relevant to emissions and climate change.

3. These demands demonstrate the pressure on BAA to develop a leadership position on aviation's contribution to climate change if it is to maintain its reputation as a 'quality' company and manage the medium to long term business risks arising from the climate change issue.

4. The following events could put this issue more firmly on the agenda of Governments and environmental groups in the next three to five years :

- T5 Decision;
- The Royal Commission on Environmental Pollution's forthcoming report on aviation (publication within 3 years);
- Publication of Government's 30-year aviation policy ;
- If the international Civil Aviation organisation fails to deliver policy recommendations in September 2001;
- International developments:
    ⇒ US position on Climate Change
    ⇒ Europeans 'going it alone' in taking unilateral action
    ⇒ Development of a market-driven approach to dealing with Climate Change independently of Government action
- The allocation of aircraft emissions to national inventories may focus the Government's attention on aircraft emissions; and
- Total transport emissions are cut by sufficient cars becoming emission-free. This could switch the focus of environmental groups to aviation.

Policy development

5. The recommended policy position set out at Appendix 1 draws on the outcome of a scenario planning exercise undertaken by Group Airport Planning and Environment, in conjunction with Group Risk and Corporate Strategy. The scenarios which emerged gave a clear signal to BAA that the significance of climate change on aviation, airports and their development is more likely than not to grow over the coming years. Three possible impacts on BAA were identified, namely, reputation, policy measures and technological developments.

6. All the scenarios suggested that the climate change impact of aircraft poses greater risk to BAA if the business chooses not to participate actively in relevant policy discussions. The risk of crude policy measures being enforced on the sector, if it is not proactive in managing the impact of aviation on climate change, was highlighted.

7. The exercise demonstrated the need for a sector-wide policy response in order to understand and manage the 'trade-off's' between noise, local air quality and climate change, and to ensure that policy measures are economically effective.

8. The outcome of the scenario planning exercise is detailed in Appendix 2, but the principal recommendations were :

   - Develop a BAA policy position on aircraft emissions and climate change;
   - Develop an 'influencing strategy' to identify who/how we can influence regarding climate change and aviation; and
   - Identify 'issue owners' to develop action plans to manage the risks identified.

Questions

I.   Does the Contract with the Community Board :

A.   endorse the principal recommendations of the scenario planning exercise?

B.   agree the policy statement in Appendix 1?

C.   approve its incorporation in this years annual report?

6.2 Policy position to be approved by the Contract with the Community Board

Policy statement

1. BAA recognises that climate change poses a significant challenge for the aviation industry and, in doing so, BAA acknowledges the importance of its 'influencing' role in working with the sector to help reduce aviation's contribution to climate change.

2. When developing policy on climate change BAA believes that policy makers should view aviation in the context of the UK's overall national strategy for sustainable development and its important role in facilitating the high value low impact knowledge driven economy.

3. Recognising its influencing and leadership role BAA will commit to:

    - Working nationally and internationally to raise the profile of climate change as an important issue for the industry through AOA, ACI and airline communities;

    - Supporting the development of UK political leadership on measures to reduce and/or mitigate aviation's contribution to climate change;

    - Promoting the need for and contributing to a sector-wide approach to climate change through a sustainable development forum /sector strategy;

    - Developing incentives for our business partners to take up new technologies; and

- Continuing to work to improve aviation's CO_2 efficiency: e.g. greater focus on ATC and operational measures, including air and ground based emissions. BAA will continue to take a leadership stance in terms of its own contribution to greenhouse gas generation, in the development of renewable energy sources for airports, in alternative fuels for airport vehicles and surface access strategies.

4. In the longer term, BAA's vision is that aircraft will be propelled by an alternative fuel which will be safe, economic and environmentally sustainable. In the meantime, BAA believes that the sector must be incentivised to deliver a technological step change by:

- Bringing aviation into the Kyoto mechanism, or any other international agreement on climate change. This includes aligning the sector with international targets to reduce emissions in the short- medium term; and

- The sector pursuing either an emissions trading regime, currently being pursued through ICAO, or a European charge.

5. BAA would support any emissions trading or emissions charge which :

- is both environmentally and economically effective;

- is designed to stimulate research into reductions of emissions at source, actual reductions in emissions during operation and investment in new technology (including alternative fuels);

- is designed transparently with input from regulators, industry and the environmental community in order to gain the widest acceptance

possible amongst stakeholders and facilitate the future growth of the industry;

- gains acceptance any emissions trading scheme, which is initially based only on CO_2 emissions, should be progressed along side work to develop and evaluate a NO_X standard at cruise level through ICAO/ European Union;

- recycles any money raised under an emissions charge into mitigation and research and development; and

- does not encourage anti-competitive behaviour by airlines under an emissions trading scheme.

6.3 Paper For The Approval Of The Contract With The Community Board On The Outcomes of The Scenario Planning Process

Scenario planning on aircraft emissions and climate change

The scenario planning exercise

To support the development of a policy position on aircraft emissions and climate change, a scenario planning exercise was undertaken. This exercise explored how the issue could impact upon BAA in the future and had the following objectives:

- Familiarise an internal BAA audience with possible 'futures' relating to climate change regulation, policy and impacts on BAA

- Analyse what BAA needs to do in order to manage these uncertainties/risks and take advantage of the opportunities the future presents.

Scenarios are story lines about the future. They are designed to familiarise people with a range of issues and stimulate discussion. They do not predict the future or any chain of events. The timeframe of the scenarios developed was 2030.

There were three stages to the scenario planning process:
- Interviewing leading experts and opinion formers on the impact of climate change regulation, policy development and public concern on aviation and airports
- A workshop to develop scenarios with internal and external opinion formers
- A workshop to look at the impacts of theses scenarios on BAA in more detail and discuss ways to manage future uncertainties.

What did the scenarios tell us?

1. The scenarios gave a clear signal that the significance of climate change on aviation, airports and their development will grow over the coming years

2. Climate change could impact the sector in three principal ways;
   - Reputation
   - Policy measures
   - Technological developments

3. All the scenarios suggest that there is a risk in not positively engaging with the issue and considering a) what priority this should have for BAA, b) how best BAA can influence the issue's development, and c) how we could best mitigate for any of the risks highlighted by the exercise.

How could this impact upon BAA?

The scenarios demonstrated that the impact of this issue is heavily dependent on what policy measures the airlines adopt and over what time scale.

Reputation: guilt by association or demonstrating leadership?

- Aviation could be 'branded' a dirty industry if is not seen to 'meet its responsibilities' and control its emissions. In a future where climate change is an issue of significant public concern, this could impact upon gaining planning consents, investor relations, reducing demand, recruitment in staff and worsening relationships with local and environmental groups. This could also result in draconian regulation being enforced on the sector to control its emissions.

- If the sector is seen to responsibly manage this issue and succeeds in cutting its emissions, it would help reinforce the message that aviation is a responsible sector and should be allowed to grow accordingly.

Policy measures: A range of policy measures (taxes, charges, emissions trading, demand management, or local charges) which regulators could use to curb the growth in emissions from aircraft were discussed. The scenarios demonstrated that these measures could result in;

- Inability to grow - cap/demand management
- Price in travel increases - this could reduce marginal demand
- Changes in fleet mixes and destinations
- Consolidation of airlines - developed countries airlines could gain from more stringent engine standards
- Reducing profits of airlines
- Local differentiation- in the absence of an international agreement, airports come under pressure to take local action.

- Pressure on airports and airlines to increase yields.

The scenarios did highlight the risk of crude policy measures being inflicted on the sector if it is not proactive in managing this issue.

Technological development: None of the scenarios suggest that aircraft could be fuelled by an alternative fuel by 2030. However two of the scenarios, (where aviation is made to pay its environmental cost), suggested that some developmental work would have been made within the time-scale of the scenarios.. Airports could be affected by the following:

- changing infrastructure requirements;
- operational changes e.g. increased pressure to cut taxiing times;
- technology advancement on climate change may result in noise, local air quality contour changes or increases.

What did the scenario tell us about BAA's ability to grow capacity?

The scenarios indicated that climate change could impact upon BAA's ability to obtain its 'licence to grow'. The following variations on the scenarios were considered the most favourable to gain planning consents:

Scenario	How each scenario could allow growth
Big Brother	The degree and inflexibility of regulation in this scenario makes air travel considerably more expensive. This scenario leaves BAA little room for innovation and the company finds it virtually impossible to grow capacity in the UK. Investors view BAA as a utility. Under certain regulator conditions, which favoured market dominance, there could be an opportunity to become a major player and acquire other non-UK airports.
Co-operation	Under this scenario aviation is likely to become more expensive over a 2000-2030 time-scale. However, aviation pays its way with flexibility, in a way which best meets its business objectives. For example, under a successful emissions trading regime aircraft may be able to buy-in permits to pollute from other industries. Or a charging system, which allowed aviation to pay its way flexibly, may also allow the sector to grow.
No backbone	This scenario is characterised by uncertainty over future business conditions, future regulation, forecasts and development consents. The scenario could allow some growth in capacity but this growth would not match BAA's

	development aspirations. BAA would have to develop rigorous strategies˙ to deal with climate change on the ground, perhaps in partnership with leading airlines. In this scenario there has been no progress technological step change.

What up-and-coming events could raise the profile of this issue?

There are a number of possible issues which could put this issue [repetition of issue] more firmly on the agenda of Governments and Environmental groups in the next three to five years:

- The Royal Commission on Environmental Pollution's forthcoming report on aviation (publication within 3 years);
- Publication of Government's 30-year aviation policy ;
- If the international Civil Aviation organisation fails to deliver policy recommendations in September 2001;
- International developments:

    $\Rightarrow$ US signing up to the Kyoto Protocol

    $\Rightarrow$ Europeans 'going it alone' in taking unilateral action

    $\Rightarrow$ Development of a market-driven approach to dealing with Climate Change independently of Government action

- The allocation of aircraft emissions to national inventories may focus the Government's attention on aircraft emissions;
- Total transport emissions are cut by sufficient cars becoming emission-free. This could change the focus of environmental groups onto aviation.

Common themes in BAA response to these scenarios

In considering BAA's response to all four scenarios a number of common themes or issues have been identified:

Economic Regulation: In order to successfully manage the climate change agenda and protect BAA from international or national regulatory changes, the scenarios demonstrated that the framework for BAA's economic regulation will need to be consistent or flexible enough to support BAA's aims and objectives on climate change.

(Issue owner: Corporate Strategy)

Relationships /Sector Priorities: BAA needs to define its priorities in relation to climate change, noise and local air quality and consider how best to enable the sector to co-operate in setting out its future priorities with consistency.

(Issue owner: Group Airport Planning and Environment)

Growth: The scenarios did raise a broader question of the validity of BAA's core strategy, which is currently incentivised by the regulator, that promotes the increase in volume given the future risk posed by climate change and possibly other environmental constraints not explored in this exercise. This issue also raises the question as to how the company can weigh up and prioritise long and short term objectives and seek to challenge the regulator based on a vision of enlightened self interest.

(Issue owner: Corporate Strategy and Group Airport Planning and Environment)

Diversification/global dominance: The scenarios raised the question about how BAA intends to develop its international business (acquisition and consultancy) and possible ways to diversify the business whilst remaining within BAA's competencies.

(Issue owner: Corporate Strategy and International)

Recommendations

- Develop a BAA policy position on aircraft emissions and climate change;
- Develop an 'influencing strategy' to identify who/how we can influence regarding climate change and aviation;
- Each of the business units identified should develop an action plan about how to manage the risks identified.

6.4 Results Of Consultation On Policy Paper

Consultation feedback

I have consulted with the following organisations on the policy position on Climate change;

External

DETR (Aviation and Environment division and Global Atmosphere)

BA (Hugh Somerville)

Rolls-Royce (Jaqi Lee and Colin Beesley)

Internal

Mike Toms

Alan Osborne

Comments

DETR

- Very supportive of the proactive and consultative approach by BAA on these issues

- Helpful if any statement could be more specific- would it be possible to set out some commitments and targets?

- Emissions trading and European charge could be viewed as complementary (for example, the former as a long term and the latter as a short term solution)

- An emissions trading scheme or charge should be effective in encouraging the use of cleaner technology and operating practices rather than research as such. Any research impact may be less direct.

- European charge should be 'revenue neutral'

- Colleagues in Global Atmosphere Division confirm that the UK, along with other EU member states, and with other countries around the world, rcmains committed to implementing and ratifying the Kyoto Protocol. We need a global agreement to deal with what is a global problem, and continue to believe that the Kyoto Protocol provides the only framework for this. We will be working with the EU and other countries to maintain pressure on the US in the run-up to the resumed talks in July.

- Bringing the aviation sector **fully** within the scope of the Kyoto Protocol ie, acknowledging that domestic emissions are already included through national inventories.

BA

- overall no difficulty with position from BAA's point of view
- With regards to NOx - believes the priority should be on the research and identifying the net effects of water vapor and NOx on the upper atmosphere. In due course the effects will have to be included in the effects of aviation on climate change, which will also influence agenda with regard to alternative fuels eg, hydrogen.

- Need to ensure that this statement does not give the impression that noise is being ignored, and there could be similar trade-offs between global emissions and local NOx levels.

- Should BAA be more involved with Greener by Design effort?

Rolls Royce

- Do not underestimate the challenges of identifying an alternative fuel. I would be disappointed if alternative fuel got hyped as "the answer" which could not be delivered for any reason.
- Changes in airframe technology could also have an impact

Mike Toms

- Challenging but good - Should be taken to the Airports Board - possibly with Janis as champion.
- Clarify that the policy commits us to raising the agenda of Climate change nationally and internationally within the **industry**
- helpful piece of further work to enhance internal understanding of where the agenda could lead would be scoping/calculation of 'external costs' relating to climate change.

Alan Osborne

- Overall it's a very good, well thought through paper which positions BAA realistically

- This work fits in closely with EC Risk No 11(Health/environmental issues leads to unexpected decline in passenger numbers resulting in loss of revenue, declining profits and adverse share price impact. The risk is also reflected in EC risks 6,7, and 10.

- Should we put in that BAA will continue to take a leadership stance in terms of its own contribution to greenhouse gas generation? Presumably we wish to have very energy efficient buildings and operations which are within our direct control.

- Given President Bush's position on Kyoto is it now a good idea to bring Aviation into Kyoto - should we keep the options open here as Bush has promised a review of other options

6.5 Work In Progress To Support Policy

Delivering the policy - work in progress

Committed to	Work in progress
Raise Profile of aircraft emissions and climate change within the industry	• BAA is chairing the ACI Environment Committee with an objective to focus ACI policy development on emissions (air quality and climate change) as well as noise • BAA chairs the AOA Planning and Environment Committee and aims to raise the profile of aircraft emissions and climate change starting with discussions of this policy
Support the Development of UK political leadership	• BAA is supporting a two year secondment to the Sustainable Development Commission • Attendance of workshops on Energy and Transport and Tourism designed to help the UK Government prepare for the 2002 Earth Summit
Promote the need for a sector wide approach (aviation sector)	• Examples of BAA adopting a sector wide approach include the Ashden Trust Aviation and Environment Seminar and the aircraft emissions and climate change scenario planning exercise • BAA suggestion that there should be a National Sustainable Aviation Forum made in the response to Government's white paper on the Future of Aviation and in CEO speech which launched the consultation process

	• BAA is working increasingly with British Airways and Air BP on energy conservation and transport initiatives
Develop mechanisms with the regulator to encourage business partners to take up new technologies	• Investing in developing an inventory of emissions from aircraft, under different operating conditions, to enable differential emission charging • Exploring a joint work programme between Group Strategy and Group Airport Planning and Environment on the external costs of aviation and the potential to internalise these costs through the regulatory system.
Improve BAA's and Aviation's fuel efficiency	• Climate change strategy which commits BAA to a 60% per passenger reduction in emissions on 1990 levels by 2010 • Renewable energy ♦ This financial year the percentage of renewable energy in our energy mix has increased to 3.0 % from about 1.5% ♦ BAA is committed to purchasing 10% of energy needs from renewable sources by 2010. Work is currently underway with renewable energy providers to explore opportunities for BAA to purchase 10% of energy requirement from off shore wind ♦ Demonstration Photovoltaic project in Gatwick designed to support a developing industry and understand how this technology can work in the airport context

	• Developed challenging energy conservation and energy efficiency targets • Continue to work to reduce aircraft taxiing times at Gatwick and Heathrow. • Working with the airlines to supply aircraft with fixed electrical ground power and reduce the amount of time aircraft can use their auxiliary power units inefficiently. • Developing initiatives on alternative fuels e.g. Alternative Fuel Forum, trialling Liquid Petroleum Gas (LPG) in buses at Gatwick, exploring opportunities to use alternative fuelled buses at Heathrow as well as Gatwick, review of the company car policy to ensure that the company encourages low vehicle emissions, including alternatively fuelled vehicles and low mileage. • Developed detailed surface access strategies for each airport, which includes initiatives to encourage passengers and employees to increase the number of journey's made on public transport to the airports and investment in public transport

6.6 Policy Statement Taken For Approval To The Chief Executive Officer

Policy statement

1. BAA recognises that climate change poses a significant challenge for the aviation industry and, in doing so, BAA acknowledges the importance of its 'influencing' role in working with the sector to help reduce aviation's contribution to climate change.

2. When developing policy on climate change BAA believes that policy makers should view aviation in the context of the UK's overall national strategy for sustainable development and its important role in facilitating the high value low impact knowledge driven economy.

3. Recognising its influencing and leadership role BAA will commit to:

   - Working nationally and internationally to raise the profile of climate change as an important issue for the industry through AOA, ACI and airline communities;

   - Supporting the development of UK political leadership on measures to reduce and/or mitigate aviation's contribution to climate change;

   - Promoting the need for and contributing to a sector-wide approach to climate change through a sustainable development forum /sector strategy;

   - Developing incentives for our business partners to take up new technologies; and

   - Continuing to work to improve aviation's CO_2 efficiency: e.g. greater focus on ATC and operational measures, including air and ground

based emissions. BAA will continue to take a leadership stance in terms of its own contribution to greenhouse gas generation, in the development of renewable energy sources for airports, in alternative fuels for airport vehicles and surface access strategies.

4. In the longer term, BAA's vision is that aircraft will be propelled by an alternative fuel which will be safe, economic and environmentally sustainable. In the meantime, BAA believes that the sector must be incentivised to deliver a technological step change by:

- Bringing aviation fully into the Kyoto mechanism, or any other international agreement on climate change. This includes aligning the sector with international targets to reduce emissions in the short-medium term; and

- The sector pursuing either an emissions trading regime, currently being pursued through ICAO, or a European charge.

5. BAA would support any emissions trading or emissions charge which :

- is both environmentally and economically effective;

- is designed to stimulate research into reductions of emissions at source, actual reductions in emissions during operation and investment in new technology (including alternative fuels);

- is designed transparently with input from regulators, industry and the environmental community in order to gain the widest acceptance possible amongst stakeholders and facilitate the future growth of the industry;

- gains acceptance any emissions trading scheme, which is initially based only on CO_2 emissions, should be progressed along side work to develop and evaluate a NO_x standard at cruise level through ICAO/ European Union;

- is revenue neutral - recycling money raised under an emissions charge into mitigation and research and development; and

- does not encourage anti-competitive behaviour by airlines under an emissions trading scheme.

6.7 Final Policy Approved By Chief Executive Officer

BAA Aircraft emissions and Climate change policy

1. BAA recognises that climate change is a significant issue for the aviation industry. In doing so, BAA acknowledges the importance of its 'influencing' role in working with the sector to manage aviation's contribution to climate change within an international framework of globally agreed reduction targets.

2. When developing policy on climate change BAA believes that policy makers should view aviation in the context of both the UK's climate change programme and the strategy for sustainable development, as well as aviation's important role in facilitating the high value low impact knowledge driven economy.

3. Recognising its influencing and leadership role BAA will commit to:

   - Working within the aviation industry, both nationally and internationally, to raise the profile of climate change as an important issue for aviation through industry bodies such as AOA, ACI and airline communities;

   - Supporting the development of UK political leadership on measures to reduce and/or mitigate aviation's contribution to climate change;

   - Promoting the need for and contributing to a sector-wide approach to climate change through dialogue with key stakeholders e.g. through a sustainable development forum or sector strategy;

- Seeking to develop mechanisms, with our regulator, to encourage our business partners to take up new technologies in order to improve the aviation industry's environmental performance;

- Continuing to work to improve BAA's and aviation's fuel efficiency e.g. greater focus on ATC and operational measures, including air and ground based emissions. BAA will continue to take a leadership stance in terms of its own contribution to greenhouse gas generation e.g. developing renewable energy sources for airports, alternative fuels for airport vehicles and surface access strategies.

4. BAA would support practical mechanisms to minimise emissions which:

- are both environmentally and economically effective;

- are designed to stimulate the take up of clean technologies, operating practices and research into new and cleaner technologies (including alternative fuels);

- are designed transparently with input from the aviation industry and the environmental community in order to gain the widest acceptance possible amongst stakeholders and facilitate the future growth of the industry

- are revenue neutral or hypothecate revenues into mitigation, research and development; and

- does not encourage anti-competitive behaviour by airlines and accommodates the diversity of the dynamic aviation industry.

7.1 Draft Aircraft emission implementation Strategy (approval

Jan 2002)

Year 1

Committed approved and published June 2001	Action	Owner /completion date
Influence the sector (airline and manufacturers) to manage the issue of aircraft emissions and climate change	Develop and deliver key messages to identified audiences on the need for aviation sector to be more proactive in managing the impact of aircraft emissions on climate change:- ⇒ Define key audiences ⇒ Develop key messages ⇒ Check messages are technically sound ⇒ Check that messages are consistent with messages on Air Quality and Noise ⇒ Produce relevant documentation ⇒ Identify and brief key people in BAA who will deliver messages ⇒ Deliver messages externally ⇒ Audit progress in line with company best practise	Kathryn Barker Emma Noble Liz Tooke Commencement of delivery June 2002
Support the Development of UK political leadership	• Develop political brief • Begin discussion with Senior civil servants and ministers	December 2002 EN and Stephen Hardwick
Promote the need for a sector wide approach (aviation sector)	• Develop and seek approval from the (AOA)? on a proposal to develop a Sustainable Aviation / sustainable mobility forum for the UK, funded by industry. A key theme of the forum to include the contribution of the	EN and LT (August 2002)

	sector to climate change	
	• Explore the possibility and if realistic develop and seek approval from the BAA board for a voluntary carbon off-set project for passengers, in partnership with British Airways or leading airline	EN (Feb 2001)

Develop mechanisms with the regulator to encourage business partners to take up new technologies	• Group Strategy and Group Planing and Environment to begin discussions with the CAA on integrating emission standards into airport charging.
	
	   • Develop BAA's understanding of internalising external costs, and consider how these could be internalised through planning/ charging system
	   • Develop business case for Mike Toms and CEO
	   • Present 'business case' to Group Strategy
	   • Develop and submit a paper to CAA
	   • Develop and agenda for further work with Group Strategy
		• EN/KB/MT (Sep 2002)

Improve BAA's and Aviation's fuel efficiency	• Develop milestone targets in order to achieve BAA's long term climate change objective • Review objectives with regard to airfield efficiency	Shaun McCarthy Jerry Percy / Laura Garrod (April 2001)

7.2 Draft Influencing Business Case

BAA's influencing role within the aviation industry

1. Why does BAA need to play an influencing role?

For BAA to continue to grow its business, it is essential that BAA not only demonstrates its commitment to sustainable development, but also demonstrably improves its performance in some specific areas. In particular, where BAA has made specific commitments, for example through Gatwick's legal agreement, BAA must deliver. There are some issues, such as air quality and climate change which could become 'show stoppers' for further development.

Five key issues have been identified as most concern to our national and local stakeholders, namely noise, climate change, local air quality, surface access and waste. However, because of the nature of the aviation business, BAA doesn't have direct control of many of the impacts. Although BAA can work on minimising its own impact in each of these areas, without the support of business partners, airports performance will not improve.

2. Who does BAA need to influence?

Airlines, aircraft manufacturers and air traffic control are the key audiences who can help achieve a step change in reducing noise and reducing emissions.

To improve our waste performance and increase public transport usage, all of BAA's business partners on airport will need to be influenced.

Also, international institutions, national and European governments need to be influenced to bring about necessary changes in legislation and support the aviation industry.

3. What is BAA's commitment to the influencing agenda?

Within some of BAA's policies, we have committed to influencing our business partners to improve performance. Below are extracts taken from these policies:

3.1 Climate change and emissions policy (April 2001)

Recognising its influencing and leadership role BAA will commit to:

- *Working within the aviation industry, both nationally and internationally, to raise the profile of climate change as an important issue for aviation through industry bodies such as AOA, ACI and airline communities.*

- *Engage with the Government to support the development of UK political leadership on measures to reduce and/or mitigate aviation's contribution to climate change.*

- *Promoting the need for and contributing to a sector-wide approach to climate change through dialogue with key stakeholders e.g. through a sustainable development forum or sector strategy.*

- *Seeking to develop mechanisms, with our regulator, to encourage our business partners to take up new technologies in order to improve the aviation industry's environmental performance.*

- *Continuing to work to improve BAA's and aviation's fuel efficiency e.g. greater focus on Air Traffic Control and operational measures including air and ground based emissions. BAA will continue to take a leadership stance in terms of its own contribution to greenhouse gas generation e.g. developing renewable energy sources for airports, alternative fuels for airport vehicles and surface access strategies.*

3.2 Environment policy (date)

Leading our staff and business partners into environmental improvements through the effective communication and implementation of our policy.

3.3 Sustainable development commitment (April 2001)

Influencing solutions for wider environmental improvements and aviation's contribution to climate change directly through the industry as well as Government and bodies such as Airports Council International and the UN International Civil Aviation organisation.

Proactively engaging in global, EU and national government consultations and fora on the sustainable development and the aviation industry.

3.4 Transport policy/objectives? (to add)
3.5 Air quality - insert Gatwick commitments

4. How do we currently influence our business partners?

Staff at varying levels play key roles in BAA's influencing role, in particular about increasing public transport usage and reducing noise.

Issue	Audience	How	BAA representative
Noise	DTLR		Richard Neil Ian Witter
	ACI	environment committee noise committee	Roger Cato Kathryn Barker Claire Williams Bosco Rodriguez
	Airlines (which ones?)	airport noise seminars aviation environment seminar	Ian Witter
	NATS Eurocontrol		

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Issue	Audience	How	BAA representative
	Aircraft manufacturers: Airbus Boeing Rolls Royce Airport Operators Association ICAO European Union working groups	meetings environment committee	Ian Witter Roger Cato Kathryn Barker
Air quality	ACI Aircraft manufacturers Airlines	environment committees av env seminar (Mar 01) av env seminar (Mar 01)	Kathryn Barker Mike Hodgkinson Kathryn Barker
Climate change	ACI (environment committee)	av env seminar (Mar 01)	Mike Hodgkinson Kathryn Barker
Public transport	Rail operators Bus operators Business partners	transport forums	Airport MDs Transport teams
Waste	Business partners	Heathrow - airport	Roger Cato

Issue	Audience	How	BAA representative
	AOA	wide waste group Stansted awareness programme	Claire Williams Sarah Beavins

4.1 Strengths

- A strong base of contacts has been built throughout the aviation industry.
- Influencing activity takes place frequently with some contacts
- BAA has built up a reputation for playing a leading role in sustainability in the transport sector
- Influencing activity on noise and public transport has been relatively successful

4.2 Weaknesses

- Lack of co-ordination
- Activity is very weak on the climate change/ emissions/air quality agenda
- There is no strategy, priorities or targets for the overall influencing agenda
- Although there is influencing activity taking place at the working level, key decision makers need to be reached.
- Action and success of influence is difficult to quantify.
- Current action is not sufficient to protect BAA's interests and manage associated risks.

5. How could we improve our influencing role?

To ensure that none of these issues become 'show stoppers' for future development, it is essential that BAA lives up to its commitments on influencing

the aviation industry and it is therefore necessary that a strategy is produced which addresses this.

Within the new strategy it is proposed that it should include the following steps:

- It is suggested that BAA's influencing activity is co-ordinated under the direction of Jenny Bradley who now has additional responsibility for co-ordinating BAA's sustainability programme.

- For each of the key issue areas priorities, targets and action plans need to be produced.

- A high level contact programme should be set up for either Mike Hodgkinson or Mike Clasper to meet with the key decision makers in the airline and aircraft manufacturing sectors.

- A co-ordinated programme needs to be developed across the company.

- Fact sheets should be produced to ensure that all staff who are involved in influencing activity are clear about BAA's stance on each of the key issues and what we are trying to achieve.

- Measurements need to be put in place and, if possible, influencing activity should be audited.

Liz Tooke
2001

Input from Emma Noble, Phil Dunn, Graham Earl and John Penniket

7.3 Carbon off-set trail internet project

Paper for discussion with BA/ BAA

Objective

Contribute to our Aircraft emissions and Climate Change policy

Develop our leadership position on aircraft emissions and climate change

Partners

British Airways

Climate Care

Endorsed by

Forum for the Future

What is it?

A facility on BAA's and possibly BA's internet site which will allow BAA

passengers to off- set their carbon emissions from their flight by investing in a

number of renewable energy projects or domestic energy efficiency projects.

For discussion - *What role, if any, could trees play in this?*

I would advise that tree sequestration does not feature as part of the off-set

strategy

Typical Costs to the passenger

Would need to discuss with the Climate Care

Positioning

- Low key - little if no publicity.
- Voluntary service to passengers to off-set carbon from their flights,

  responding to customer enquires

- Temporary measure- facility will only exist up until other measures are introduced (emissions trading or emissions charge)
- BAA are aware that the climatic impact of flying is likely to be greater than the carbon emissions alone but impacts of other emissions can not be quantified with certainty so these will not be included
- All projects are approved by an independent verifier (this needs discussion with Climate Care)

Risks

- Adverse publicity and raising awareness of the issue. Mitigated by the fact that it is a trial, low publicity and Forum for the Future have signed up to it. Is raising awareness always a bad thing?
- Demonstrate to the chancellor that people are prepared to pay extra for their flights?
- Reaction of other airlines?
- Could this be viewed as taxation?

Opportunities

- Looks like we are doing something
- Will get an idea, form the level of response, about how many people are prepared to pay extra to off set carbon impact of flight

External positioning

As a suggestion, I have put together some words that we could put on our website;

"This voluntary pilot scheme offers BAA passengers an opportunity to off- set the carbon emissions from their flights. It has been developed in partnership with the Carbon Storage Trust and BA as a response to passengers requesting a facility to off-set their carbon emissions. Passenger contributions are directly invested in domestic energy efficiency and renewable energy projects in the developing and developed world.

Aircraft emissions other than carbon emissions, which may also have an impact on the climate, are not able to be off set as these emissions can not be quantified with any scientific certainty. This scheme does not make passengers flights 'climate neutral' but does go someway in mitigating the climate impact of their flight.

The scheme is intended as a temporary measure, which will be available until other voluntary or economic measures have been agreed internationally. The scheme has the support of the Independent Charity Forum for the Future. (words form FFF which will be both complimentary and challenging)"

Then we would need to add in something about the BAA policy positions on ground and aircraft emissions.

EN 2001

7.4 Presentations on models of sustainable development

Models of Sustainable Development
- do they matter and what do they tell us?
Emma 2001

Objectives
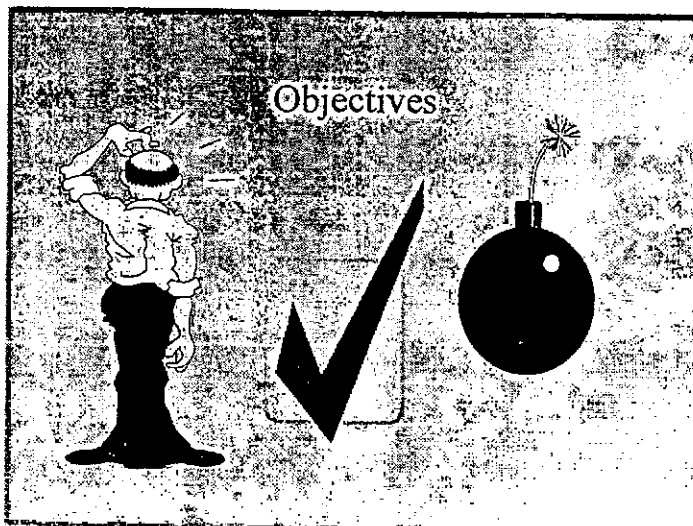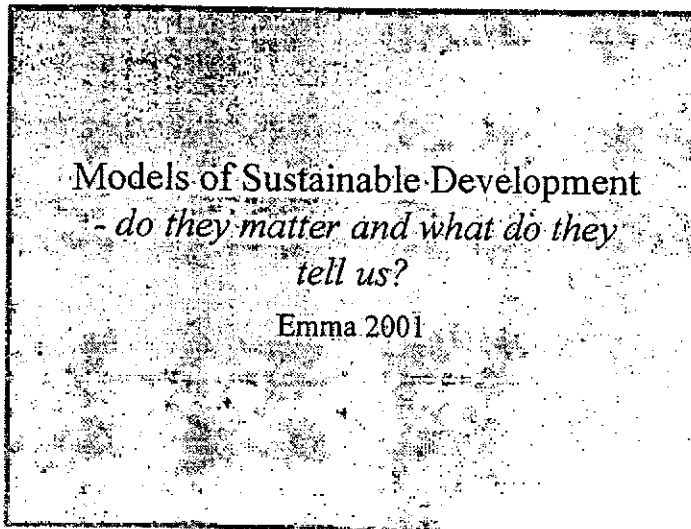
Currently

- Government's definition beginning to be understood in the business

- Language used by local and regional planning and development authorities

## But businesses get criticised...........

- *'With very few exceptions, the Top 50 reports fail to adequately address what we consider to be the biggest sustainability issues associated with a company's impacts - ...[including] exponential increases in global air travel for an airline or airport operator'. (UNED)*

Workshop

Considered
- The implications for BAA if it prevailed
- What would our priorities be?
- How would we communicate this model and how would stakeholders respond?

Sustainability:
The five capitals model

The Government's model
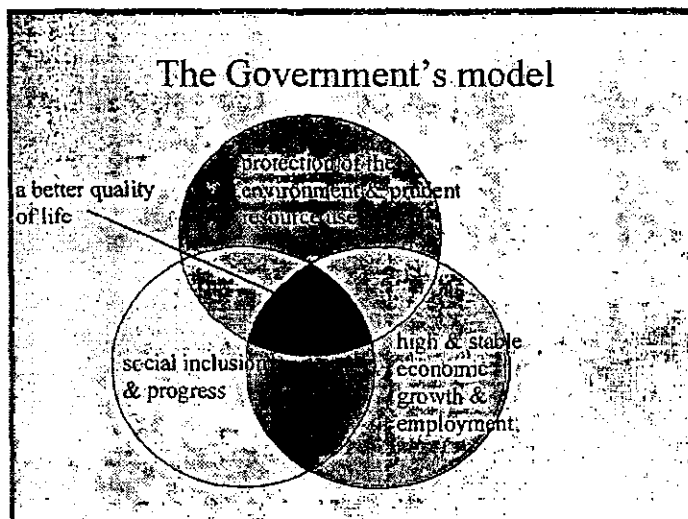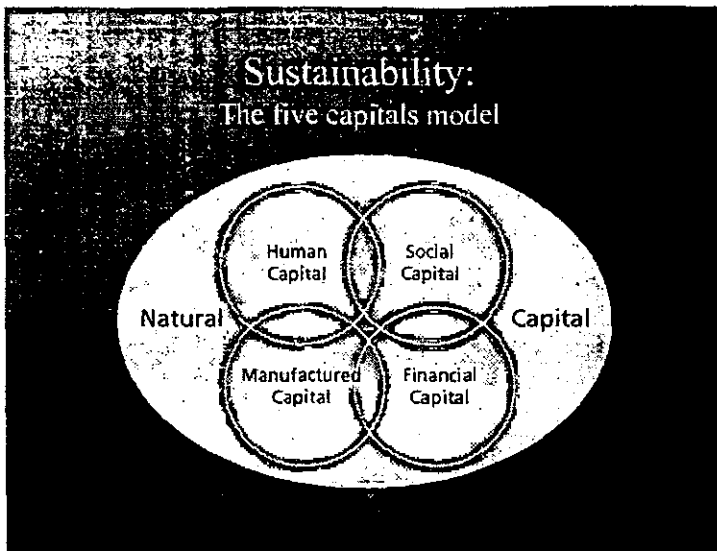
Environmental space- FoE position

- Rationing - resource availability / global population
  - for the UK
    - 77% reduction in CO2 emissions
    - 85% reduction in use of cement
    - 90% reduction in use of aluminium
- Resource inequality -political destabilising
- Basis of Kyoto

5 capital model

- Aviation, like other businesses and sectors, is currently degrading natural capital
  - Waste, climate change, air quality

- Physical limits already being discussed on noise, air quality, and climate change
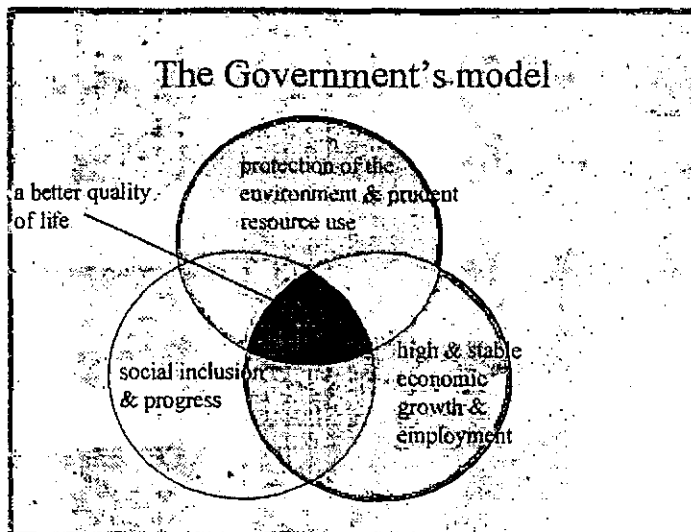
Headline thoughts

- Most interest in Natural Capital
- Transferability
  - Between capitals
  - Impacts managed globally - e.g. climate change
  - Impacts managed locally - e.g. Air Quality
  - Could increase natural capital e.g. biodiversity
- Enforceability?
- Limits-setting is a political process

If this world view prevails

- More difficult thresholds for growth
- Stronger R&D focus - airport and aircraft technology (including alternative fuels)
- Cut emissions/ develop emissions tr
- Major focus on air quality
- Bigger quality focus, service ind diversification

The Government's model

a better quality of life

protection of the environment & prudent resource use

social inclusion & progress

high & stable economic growth & employment

Headline thoughts

- Open to interpretation
- BAA - Greater efficiency "cleaner and smarter development"
- Government does not talk about 'limits'
  - Making progress on all three at the same time
    - DTI major focus on resource productivity
- Practical response based on political judgement at regional and national level

If it prevails and implications

- Should allow some growth
- Develop social and regeneration objectives
- Major focus on air quality and climate change and R&D

Implications

- Most comfortable with this model
- Need to consider how we deal with Natural Capital whilst advocating this model

THE BEGINNING
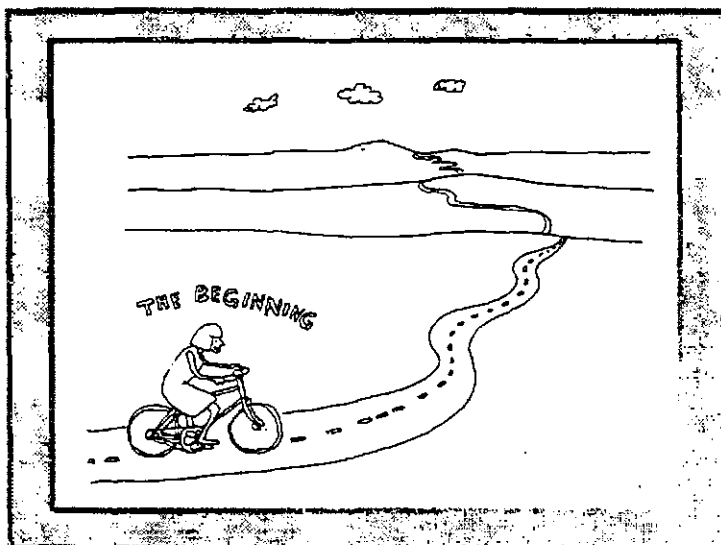
The Future: What do these models tell us?

- Models moving closer together
- Reality is that we are heading towards some limits
  - Regulatory and values-led
- Both models highlight air quality and climate change as major issues
- Decisions will remain political regardless of models

Recommendations: Policy and Communications

- Use government's model - use it humbly
  - Develop social objectives
  - Reinforce current work on air quality and influencing of R&D
- Openly recognise limits to natural capital at global level and the issues it creates for the industry
  - This could mean setting more aspirational long term objectives e.g. zero waste, zero emissions

Director of Greenpeace UK

" *Businesses are much more credible when they admit the true impact of operations and tell us when things are difficult* "

- Not off the hook but more open about the challenge and decisions facing society

Strategic Recommendation

- We accept that the models move in the same direction
  - We can not predict the pace of change
- Accept the need for maintenance of natural capital
  - BAA's biggest risk is complacency on resource productivity
- Stop BAA staff feeling comfortable on these fronts
  - Need to be challenged