

Air freight:

the impacts

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Published by
AirportWatch
December 2009



A report which assesses the facts behind the UK air freight industry: its contribution to the economy; its impact on the environment and on local communities

Introduction

Air freight has been overlooked during the last decade. Governments, campaign groups, the industry and much of the media have tended to focus on the growth in passenger traffic. This report tries to rectify that situation. It looks at the way air freight has developed in recent years and assesses future growth projections. It outlines the environmental impact of air freight and questions whether its value to the economy is nearly as great as the aviation industry claims.

Air freight in the UK doubled in the 1990s but has stabilised over the past 10 years, leaving questions to be asked about the Department for Transport's predictions that it will continue to grow rapidly.

But there are also questions about the value of air freight to the UK economy. The UK is running a £20 billion annual trade deficit in air freighted goods with non-EU countries – the countries which account for 85% of our trade in air freight. Air freight is also hugely subsidised by the public purse: tax-free fuel; an exemption from VAT; not subject to Air Passenger Duty or an equivalent tax; and in receipt of regional assistance. A new Government would do well to examine the economic value of these tax-breaks.

Air freight contributes to CO2 emissions. It is difficult to pinpoint its exact contribution because some freight comes in the belly-hold of passenger aircraft, but it is estimated that air cargo accounts for between 20-25% of global CO2 emissions from aviation.

Air freight also causes major noise problems. It can use older, noisier planes. It often comes in at night and only a proportion of freight is time-critical. This would suggest that, given the political will, the amount of freight delivered at night could be significantly reduced, bringing blessed relief to many communities.

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December 2009

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An Airport by Airport Outline is available online – www.airportwatch.org.uk/airfreight.php

Abbreviations

ACI	Airports Council International
AEF	Aviation Environment Federation
APD	Air Passenger Duty
ATWP	Air Transport White Paper
BA	British Airways
BAA	British Airports Authority
BAWC	British Airways World Cargo
BIP	Border Inspection Post
CAA	Civil Aviation Authority
CO2	Carbon Dioxide
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
ERDF	European Regional Development Fund
EU	European Union
FoE	Friends of the Earth
GHGs	greenhouse gases
GDP	Gross Domestic Product
HMRC	HM Revenue & Customs
HMT	HM Treasury
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
MRO	Maintenance, Repair and Overhaul
OEF	Oxford Economic Forecasting
RDA	Regional Development Agency
SIPRI	Stockholm International Peace Research Institute
UN	United Nations

Executive Summary

Debate on aviation expansion is generally confined to 'air travel' referring to passenger flights, ignoring belly freight and cargo in dedicated freighters. The main categories of air cargo include mail, heavyweight and outsize, HazMat (hazardous materials), live animals, perishable (temperature sensitive) goods such as chemicals, food and ornamental plants, aid and humanitarian and military. Air freight accounts for approximately 40 per cent of the value of UK trade outside the EU, which is on a par with global modal share of international trade. In addition to goods that are inherently high-value such as gems and electronic goods, air freighted goods may be time or process critical, such as capital equipment, components and machinery. Along with a wide range of consumer goods, a considerable proportion of air cargo is business-to-business, pre-consumer in the supply chain.

Globally, until the economic downturn began in autumn 2008, air freight was a fast growing sector, and it was anticipated that growth would exceed that for passenger flights. In contrast to industries such as construction and vehicle manufacturing, air freight maintained growth throughout the oil price spike of 2008 and was late to be affected by the recession, only reported declining volumes towards the end of 2008. From early 2009 airports and carriers worldwide have reported plummeting volumes, with some marked exceptions, most notably a shift of traffic to the Middle East.

In contrast with the long term trend of global growth in air freight, UK air freight has been stable for over a decade, diverging ever further from Department for Transport (DfT) growth forecasts. Most UK airports have recently reported declining freight volumes. In the face of this, air freight capacity expansion is still underway and planned all around the UK. Air freight growth plans shift the emphasis from Heathrow to East Midlands, Manchester and smaller regional airports. Some regional airports plan to expand freight by many multitudes, for example Robin Hood (Doncaster Sheffield), Kent and Liverpool.

Cargo expansion plans stated in UK airport Masterplans between 2007 and 2015 would entail volumes doubling in this period, then almost tripling by 2030, but contain little information on what this projected air freight increase would consist of or how it would be achieved. Actual air freight growth plans exceed this figure as several airport Masterplans do not state a target tonnage and there is also freight development at airports which are not obliged to produce a Masterplan. Development of airport business parks on and adjoining airport sites aim to generate multimodal logistics growth including air freight. In many instances freight and business park development encroaches on green space and agricultural land. If the planned air freight capacity becomes fully operational it will undermine the UK's greenhouse gas emission reduction targets. If the capacity is under utilised, we will be left with white elephants, or generic business parks, and a further widening of the disparity between DfT forecasts and actual freight volumes.

Whilst air freight volumes are small in comparison with the amount of goods transported by road, rail and shipping, the negative environmental impacts including greenhouse gas emissions are disproportionately high. These are estimated by Defra (the Department for Environment, Food and Rural Affairs) at 4.6 times the CO₂ emissions of road transport per tonne kilometre, 29 times the CO₂ emissions of rail and between 30 and over 150 times the CO₂ emissions of shipping. Support for aviation growth plans is based on the optimistic assumption of a step change in aircraft fuel efficiency, whereas in reality gains in efficiency are minimal and this is expected to continue. Globally, air freight trade imbalances bring inefficiencies in fuel use, as low load factors, with under filled freighters and belly hold capacity, are widespread.

Until the recession, logistics was a fast growing sector worldwide across all modes of transport. Globally, the rate of shipping growth has been comparable to that of air freight. Global supply chains are frequently multimodal incorporating air, land and shipping legs and the different modes are interdependent. Multimodal supply chains and transshipment (goods loaded from one plane to another) means that the distance freight travels often far exceeds that between the starting point and destination. In addition to contributing to human induced climate change, freight inflicts the worst of aviation's short term and localised impacts on nearby communities. As the newer, more efficient passenger planes come into service, older, noisier and more polluting planes are frequently converted to freighters. Freight expansion plans also bring relentless pressure for increased night flights. The worst safety impacts are in poor countries where the local population are especially unlikely to ever travel by plane. Ageing freighters carrying humanitarian aid to Africa have an appalling safety record of crashes with fatalities of crew and people on the ground. Several firms contracted for aid missions are simultaneously involved in destabilising and illicit commodity flows, of weapons and cargo for resource extraction.

The negative environmental impacts of air freight are supposedly compensated for by economic benefits, but air freight's reputation as a driver for economic growth merits scrutiny. Proponents of expansion of air freight argue that it is a crucial driver of economic growth but there is a lack of in depth analysis of the economic impacts. As UK air freight has flatlined for a decade, the case for a causal relationship, or even a correlation, between air freight growth and GDP growth appears to be even weaker than for passenger flight growth. Air freight's economic benefits also need to be balanced against tax breaks and subsidies. Air freight, as with aviation as a whole, benefits from tax breaks and is even more heavily subsidised than passenger travel, and this will continue as the proposed Aviation Duty, which would have taxed air freight for the first time, was shelved. Government agencies' support for freight related expansion includes subsidies for freight hangars, business parks, research and lobbying. There is a lack of accountability regarding air freight expansion subsidy as considerable funding is channelled via unaccountable Regional Development Agencies (RDAs). Lax planning regulations on airport sites and the Masterplan framework mean that freight expansion frequently takes place outside the usual processes of democratic decision-making.

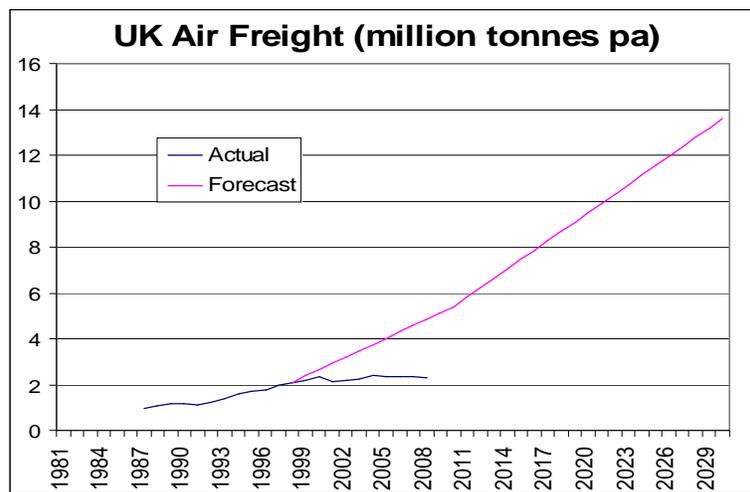
The UK is affected by air freight trade imbalances, with a significant air freight export deficit in trade with all world regions. This is particularly marked in air freight between the UK and non-EU countries, which accounts for 85 per cent of UK air freight. UK imports from outside the EU at 1,663,000 tonnes are over four times the weight of exports. There is also a gaping air freight trade gap in UK air freight outside the EU in terms of value, at £20 billion. This highlights inefficient resource use, and casts doubt on the economic benefit to the UK in terms of export earnings and the purported job creation benefits of expansion. Air freight expansion could be enabling relocation of employment to lower cost locations, raising the question of whether air freight expansion is more effective at exporting jobs from the UK than goods. Furthermore, there are indications that recently opened logistics facilities at airports are highly mechanised creating few jobs in relation to the scale of the developments, and are not being utilised as anticipated. The evidence base that businesses consider air freight to be of crucial importance to growth and investment is inadequate, and there are indications that the security and reliability of air freight, rather than speed, are deciding factors for this choice of mode of transport. The fallibility of the forecasts for, and purported benefits of, air freight to the UK economy brings the opportunity for modal shift to less environmentally damaging road, rail and shipping.

Key Facts

UK Freight – growth has stabilised

- UK air freight grew rapidly from 1970 through the 1980's and doubled in the 1990's. It grew from 580,000 tonnes in 1970 to 2.2 million tonnes in 2002.
- In 2003, the Department for Transport forecast that freight growth would grow even more rapidly over the next decade. In reality, UK air freight has stabilised in the last ten years.

The divergence between forecast and actual air freight volumes is widening. It throws into doubt the Department for Transport's growth projections.



Graph by Paul Grimley

Global Freight is still growing

- While UK freight volumes have been stable for a decade, global air freight has maintained steady growth. Globally, air freight climbed to a high of 88.5 million tonnes in 2007.
- By value, this amounts to 35-40% of world trade.
- International express freight has grown at more than twice the rate of total air cargo traffic over the past decade, averaging 12.9 per cent annually.

The origins and destinations of UK freight

- Only 5% of air freight is domestic flights within the UK:
- EU flights account for 10% of freight
- The primary routes for UK air freight are the US and Asia
- Whilst the *volume* of air freight to non-EU countries is very small in comparison to road, rail and shipping, it amounts to 40 per cent by *value* of UK trade with these countries.

What freight is flying?

- Air freight falls into two distinct categories. There is the freight which uses the bellyhold capacity of scheduled passenger flights and there is freight which comes in dedicated freighters on routes with high volumes.
- In the UK, the 2003 Air Transport White Paper suggested that specialist express carriers could account for over 50% of the air freight market by 2030.
- The amount of food air freighted into the UK more than trebled between 1992 and 2006

Impact on Climate Change

While it is the case that the proportion of goods that are air freighted is small compared to other modes, the environmental impacts are disproportionate.

DEFRA has calculated air freight CO2 emissions per tonne kilometre, for the long haul flights which make up the majority of air freight, as about 4.6 times those of road transport, up to 29 times those of rail transport and between 30 and over 150 times the emissions of shipping. These comparisons refer to long haul flights, which constitute the majority of air freight.

Aviation is an especially important issue for the UK's greenhouse gas reduction strategy as the DfT estimated it accounts for 6.3 per cent of emissions. In order to meet the UK's carbon emission reduction targets by 2050, to offset aviation's rising emissions, all other sectors would have to reduce their emissions by 90 per cent instead of the already challenging target of 80 per cent.

Aviation industry bodies acknowledge that it is difficult to disaggregate cargo from passenger flights to assess the GHG emissions separately, especially when considering freight carried as belly hold. But it is estimated that freight accounts for between 20 and 25% of aviation's total CO2 emissions.

Impact on Noise

Air freight leads to particular noise problems as older, less efficient noisier passenger planes are often converted to freighters. There is relentless pressure for more night flights, particular at airports such as East Midlands.

Impact on the Economy

There is a big trade deficit in air freight.

The UK imports more air freight by weight, 57%, than it exports, at 43%. The trade gap is particularly marked in international freight outside the EU, which accounts for 85 per cent of UK air freight. Advocates of air freight expansion highlight the economic benefits of high-value exports, but the trade imbalance in terms of value is still marked. The value of the imports outside the EU was £31.3 billion, whilst the value of the imports was £51.1 billion producing a trade deficit of £20 billion.

1 Background to air freight

1.1 Types of air cargo

MAIL

'Cargo' is the generic term for freight and mail, with 'freight' referring to cargo excluding mail. Until the Second World War, the majority, about 68 per cent of global air cargo was mail, a considerable proportion of this was communication to maintain the command and control of the British, French, Belgian and Netherlands colonial empires. By 1951 the proportions had switched and mail constituted 20 per cent of total air cargo.¹ The CAA (Civil Aviation Authority) publishes mail statistics separately from freight. In 2008 234,015 tonnes of mail were carried by air freight through UK airports. The total amount of mail handled by UK airports rose about 15 per cent between 1998 and 2008, maintaining growth at 14 per cent in 2008. Over the past decade, mail volumes at airports including Manchester and Gatwick declined as Royal Mail centralised its operations. The Royal Mail operates its main hubs at Belfast, Bristol, East Midlands, Edinburgh and Stansted with feeder hubs at airports including Bournemouth, Exeter, Newcastle and Inverness. In 2007 there were 50 Royal Mail flights each night, transporting 5.2 million items of mail on average.²

CONSUMER GOODS

One driver for the air freight of a wide range of consumer goods, including electronics like computer games and mobile phones, books and toys is faster market cycles. Most of the profits are reaped in the first few weeks of sales. Fast fashion also has a limited shelf-life and a report on ethical fashion by Mike Flanagan in Just-Style.com in August 2007 looked at a range of studies which showed that British fashion buyers rely twice as much on air freight for imports from China and India in comparison to French, German or Spanish buyers.³ AllPort's 20,000sq metre freight centre at Heathrow Airport provides services for a range of sectors including pharmaceuticals, publishing and defence. The facility also handles deliveries by truck and which have been shipped to the UK, but fashion was part of the 70,000 tonnes of goods which were air-freighted by AllPort in 2005 and the freight centre has space for 250,000 hanging garments and processes 10 million garments per year.⁴ Use of air freight extends to firms that are regarded as exemplary in environmental practice in their operations, although many are attempting to reduce it, for example, in 2008, the Body Shop made a commitment to set a target for reducing its use of air freight, in its operations.⁵

HEAVYWEIGHT & OUTSIZE

Heavyweight, outsize and awkwardly shaped industrial equipment for resource extraction such as mining, infrastructure development from transportation to power plants and for manufacturing has been a prominent sector from the early years of air freight to the present day. All kinds of vehicles from cars to train carriages are carried in the giant An-124s, and trucks are air-freighted from Robin Hood Airport to Africa. Exploration, drilling and production equipment for the oil and gas industry is a considerable cargo sector for many airlines including UK based Coyne Airways and MK Airlines with a hub at Kent Airport.

The oil price rise, spiking at a record high in July 2008, boosted air freight of exploration, drilling and production equipment, showing a willingness to burn up aviation fuel in order to secure remaining fossil fuel supplies as quickly as possible. There were some record breaking oil related flights, including 200 oil pipes from Kent Airport to Saudi Arabia, flown by MK Airlines.⁶ Outsize specialist Volga-Dnepr flew their longest ever shipment on an Il-76 freighter, a telescopic slip joint and other equipment including a 'pup joint cross-over' from Glasgow Prestwick to Congo.⁷ In August 2008, Robin Hood Airport reported handling an An-124 filled with 85 tonnes of oil well equipment to Russia.⁸ Oil industry equipment also features in new scheduled flights, expected to be the main cargo in bellyhold in BA's new flights from Heathrow to Saudi Arabia.⁹ In June 2008, West Air began a new freighter service twice weekly out of Aberdeen to Stavanger in Norway for the oil and gas industry.¹⁰

Heavyweight freight is often awkwardly shaped and/or delicate and requires specialist handling. This includes many of the tourist attractions that holidaymakers fly off to see. Art collections including paintings and heavyweight items like sculptures and statues tour the world in dedicated freighters. Air freight of concert and stage equipment is widespread, such as singer Beyonce's London 02 performance in June 2009, with two freighters carrying 200 tonnes of stage, sound and lighting equipment from Stansted to New York.¹¹ Rock-It at Kent Airport specialises in band and stage equipment. Kent Airport also receives freighters containing racing cars; in April 2008 two B747s loaded with over 200 tonnes of 29 racing cars and motor equipment were flown from China for the A1GP World Cup.¹² It is anticipated that UK air freight will be boosted by hosting the Olympics in London in 2012.

THE AIRLINKED ASSEMBLY LINE

A high proportion of air freight is business-to-business, pre-consumer in the supply chain. The Department for Transport (DfT) published *The air freight end-to-end journey, An analysis of the end-to-end journey of air freight through UK international gateways*, in May 2009, which showed that 98 per cent of express freight volume is business-to-business traffic.¹³ Components, machinery and spare parts for products like electronics, vehicles and textiles may not be intrinsically high value, but process critical and the cost of air freight can be lower than the production line coming to a standstill. Globalisation of manufacturing has extended supply chains with a combination of more complex products, a shift from factories making finished goods to assembly plants making components, larger scale and more specialised operational sites and just-in-time supply chain management to cut storage and inventory costs. Air freight in the supply chain ranges from ad hoc to routine.

The airlinked assembly line is exemplified by aircraft development, manufacturing, repairs and maintenance. Both Boeing and Airbus have constructed special freighters for flying components around the world to the final assembly plants. Glasgow Prestwick was the first UK airport to handle a GP7200 engine for the new Airbus A380 which was flown in from Chicago then transported onwards to Cardiff.¹⁴ Components are also transported by road and sea, and Airbus were keen to promote A380 wings leaving their Broughton plant by barge along the River Dee on the way to the final assembly plant in Toulouse. Freighters carry smaller aircraft around, such as private jets and helicopters such as an An-124 carrying three Army helicopters from Greece to Durham Tees Airport in December 2008.¹⁵

ANIMAL AIR MILES

Animals have been flown around since the early days of aviation in the 1920s. Along with the pets and wildlife in the television reality series such as the BBC 'Airport' documentary series, there is movement of considerable numbers of animals for zoos, wildlife parks, ornamental fish, racehorses and livestock. Many airports including Heathrow, East Midlands, Luton, Glasgow Prestwick have a Border Inspection Post (BIP) for plants and animals and one is planned at Kent. Luton Airport has reported notable shipments including 1,000 sheep from New Zealand.¹⁶

HAZMAT

HazMat refers to hazardous materials dangerous chemicals such as explosive, corrosive, toxic and radioactive materials. HazMat also includes many goods relating to biotechnology, tissue culture, and agricultural inputs such as pesticides and fertilisers. Just two clicks away for the passenger flight information on Glasgow Prestwick Airport's website, the cargo pages state that the airport has the highest capacity in the UK, 11,000 kg, for explosives outside military airfields.¹⁷ Some of the less dangerous HazMat categories are permitted to be carried on passenger flights in specially sealed containers.

PERISHABLES - THE CHILL-CHAIN IN THE SKY

The term 'perishables' refers to temperature sensitive cargo and is carried in temperature controlled containers or temperature controlled freighters sometimes referred to as 'flying fridges'. These goods require a 'chill-chain' from point of origin to final destination, including perishables handling facilities at airports. This encompasses chemicals, pharmaceuticals including drugs, vaccines and veterinary products. About 80 per cent of the perishables sector consists of food and ornamental plants. The perishable food products include fruit, vegetables, fish, meat, processed foods like fruit salads and prepared vegetables. Perishables is widely stated by the industry as the biggest (by volume) and fastest growing air freight sector, for example in 2006 BA estimated that it constituted 11 per cent of world air cargo.¹⁸ The perishables sector appears to be recession resistant, and still growing for many airlines, for example BAWC reporting a continued focus on perishables, along with livestock and currency as performing well in July 2009.¹⁹

The amount of food air freighted into the UK more than trebled between 1992 and 2006. Between 2005 and 2006, the amount of food air freighted into the UK increased by 11 per cent, an additional 24,000 tonnes of food, accounting for 13 per cent of CO2 emissions from food transport.²⁰ There are reports of shift of perishable produce from air to sea freight, as the cost is lower and due to technological advances in refrigeration and other preservation extending the shelf-life of produce like asparagus and grapes to enable transport by ship. The bigger picture regarding modal shift for perishables appears to be mixed. Fruit salads and pre-chopped vegetables is a growth sector, the cutting of the produce reduces its shelf-life and the products include ingredients like pineapples which have traditionally been shipped as the whole fruit.

NON-PERISHABLE FOOD & DRINK

Air freight of ambient food and drink tends to be relatively small quantities of niche luxury products such as shipments of whisky from Glasgow Prestwick. The annual Beaujolais Nouveau 'Bojo run' entails multiple interconnecting flights criss-crossing the globe. A 1954 European ruling stipulates that shipments

of Beaujolais Nouveau must leave the European Union on the second Thursday in November. This leaves one week for bottles to reach destinations all over the world in time for celebrations of Beaujolais Nouveau Day on the third Thursday in November. BAWC has participated in the 'Bojo run' for over 20 years. In 2006 BAWC air freighted 540 tonnes, consisting of 447,000 bottles, with the convoluted supply chain including freighters from Lyon to East Midlands Airport then trucked to Heathrow to connect with passenger flights predominantly to the US and Japan, with a freighter flying back empty from East Midlands to Lyon to pick up another 100 tonnes of the wine.²¹ Other UK airports involved in the 'Bojo run' have included Robin Hood which handled half a million bottles in 2005 for distribution within the UK and distributed to other UK airports for distribution around the world.²²

AID, HUMANITARIAN & MILITARY

At the other end of the scale from luxury foods, food aid is flown to many countries in Africa, Asia and the Americas. Food aid flights are often curtailed by lack of funds, a problem which intensified with the increasing food and fuel prices of 2008 impacting on operational costs, and continues in 2009 with reduced donor funds due to the recession. Food aid is part of a wider humanitarian air freight category including medical supplies, water purification equipment and heavyweight equipment for establishing infrastructure such as vehicles, generators and building materials.

Military is a major air cargo category, for example US Defense Department contracts for companies flying cargo and passengers to Iraq and Afghanistan in 2006 and 2007 totalled \$5.6 billion with about 500 firms as beneficiaries.²³ The May 2009 Stockholm International Peace Research Institute (SIPRI) report *Air Transport and Destabilizing Commodity Flows*, revealed that many cargo carriers which are 'fuelling war economies' in Africa with the transfer of weapons, are simultaneously involved in resource extraction such as oil and minerals which drives conflict, and 'enmeshed in humanitarian aid' for the EU and UN.²⁴

1.2 Bellyhold and freighter capacity

BELLY FREIGHT

Bellyhold cargo capacity can vary according to the passenger seating configuration. A Boeing 747 can carry between 10 and 20 tonnes. The A330 carries a comparable tonnage, for example Emirates Airlines at Newcastle has a 14 tonne capacity. Air cargo at Heathrow is almost entirely bellyhold with airlines only permitted to operate a freighter service with special permission. Narrow bodied aircraft used for short haul flights or low cost carriers are unlikely to carry belly freight because of the fast turnaround times. At other UK airports including Kent, Stansted, Gatwick and East Midlands all cargo is in freighters. The environmental impact and economic significance of bellyhold freight are frequently dismissed with the argument that the plane would have flown anyway, but the freight can be a revenue generating component of passenger flights helping to keep the cost of passenger seats down. Approximately 67 per cent of the weight of all UK air freight is carried in the bellyhold of passenger flights, with 33 per cent in cargo planes.²⁵ This is a high proportion of belly freight compared to the global average of between 50 – 60 per cent.²⁶

DEDICATED FREIGHTERS

Boeing's market outlook in 2007 anticipated a global shift towards larger freighters with a capacity of over 100 tonnes, and the global freighter fleet is expected to more than double from 1,980 in 2007 to 3,980 by 2026. The freighter fleet increase is projected to include 870 new freighters and conversion of 2,480 passenger planes.²⁷ There are efficiency gains in the new models of freighters, but the old, noisier, more polluting planes are frequently converted to freighters. Passenger aircraft converted to freighters include the very noisy McDonnell Douglas MD-11. These have a capacity of up to about 96 tonnes and until recently an MD-11 used by DHL at East Midlands with at least one arriving and departing late every night.²⁸ Recently, during the East Midlands Airport Noise Action Plan consultation, this MD-11 flight was replaced by a quieter B767.

The Boeing 747 is the air cargo workhorse with a freight capacity of over 100 tonnes, providing half the world's dedicated freighter capacity. In 2008 it was estimated that the average age in service of a B747 freighter was 35 years.²⁹ Smaller freighters include Boeing 757s, with Icelandair carrying as little as 10-20 tonnes of fish from Iceland in these planes into Humberside. Boeing 737s have a capacity of about 16 tonnes, and are often used by integrators such as TNT Express.

The Antonov An-124 has a maximum payload of 150 tonnes and carries heavyweight freight such as vehicles, generators, heavy industrial equipment like power stations and oil and gas equipment. For example An-124 carried a 65 tonne oil well cap known as a 'Christmas tree', flown out from Robin Hood Airport bound for Houston, US in December 2006.³⁰ In October 2007, Air Charter Service reported flying 15 'Christmas trees', out of East Midlands Airport to Egypt on two An-124 freighters. The An-225 is the world's biggest plane, a freighter with 250 tonne payload capacity, which occasionally makes an appearance at East Midlands Airport, such as 130 tonnes of music equipment from a festival in Nigeria in 2007.³¹

1.3 Types of carriers

FREIGHT FORWARDERS & INTEGRATORS

There are three distinct types of carriers. Passenger airlines like British Midland which only operate passenger airlines but carry bellyhold freight. Combination airlines like BA operate both passenger and cargo services with bellyhold cargo and dedicated freighters. All cargo airlines operate only dedicated freighters and include Cargolux, UK based MK Airlines at Kent, and UK based Coyne Airways and Russian outsize cargo carrier Volga-Dnepr operating at Stansted.

Air freight worldwide falls into two distinct categories. The freight forwarding model uses bellyhold capacity on scheduled passenger flights, and also dedicated freighters on routes with high volumes. The integrator model provide an express, often next-day delivery, service from the origin to destination of the shipment integrated with land transportation. Integrators predominantly use dedicated freighters with some capacity bought on scheduled passenger flights. The biggest global integrators are Fedex, DHL and UPS with all three in UK including at East Midlands. From 1985 to 2005 the integrators have grown to represent almost half all air freight.³²

Integrators offer an express or next-day delivery service with the entire range of logistics services encompassing customs, ground handling at airports, overland transportation as well as air freight, warehousing and web-based technology systems to enable customers to track products along the supply chain from origin to destination. East Midlands is a key hub for integrators. Writing in *Climate Change and Aviation*, Cordula Neiberger says that 'international express has grown at more than twice the rate of total worldwide air cargo traffic, averaging 12.9 per cent annually over the past decade', 'as a proportion of total international cargo traffic, international express cargo expanded from 4.1 per cent in 1992 to nearly 11.4 per cent in 2005'.³³ In the UK, the ATWP reported that air transport sector work carried out in connection with the consultation exercises suggests that specialist express carriers could account for over 50 per cent of the air freight market by 2030.³⁴

FLAG CARRIERS

The monopoly of flag carriers, which means that the airline is designated by the government, has decreased with privatisation in many instances and liberalisation opening up routes to other carriers. Yet even though many flag carriers' preferential treatment by governments, such as subsidies and infrastructure provision including terminals, is now largely historical, they are often still major players worldwide. This includes cargo business, and in 2006, statistical analysis from Lufthansa showed that thirteen of the twenty largest airlines in terms of freight volume were flag carriers.³⁵

BAWC

BAWC (British Airways World Cargo) is a subsidiary of BA and the UK's flag carrier with a global network of over 200 destinations in 80 countries. Textiles from Pakistan were a growth area for BAWC in 2007, with a new weekly service from Karachi and Lahore in Pakistan anticipated to increase imports of manufactured goods, especially clothing, to Europe and the US. The Islamabad service was doubled to six times per week with cargo to Heathrow anticipated to consist of garments, carpets and leather goods along with surgical and sporting goods. Notable payloads in the airline's history include three freighters each filled with 120 tonnes of condoms from Chennai in India to Brazil, bringing a new meaning to the term 'emergency contraception'.³⁶

BAWC opened a Perishables Handling Centre (PHC) at Heathrow in 1995, for customs clearance, quality control, temperature checks, processing such as packaging and labelling, then road distribution to supermarkets' regional distribution centres. Perishable produce landing at Stansted and Gatwick is trucked to the Heathrow PHC. Expansion at BAWC's Heathrow PHC for temperature controlled goods including food and flowers continued in 2007 with a further 216sq metres added to the 6,410 sq metre facility, which handled over 115,000 tonnes of goods in 2006.³⁷

The expansion included a new Border Inspection Post for 'non-human consumption products of animal origin'. Growth areas for BAWC at Heathrow include supermarket-ready products such as fruit salads for supermarkets. In June 2008 *Cargo Village News* reported that 60 per cent of BAWC's cargo capacity consists of fresh fruit and vegetables.³⁸

In contrast to parent company BA, BAWC reported stable and rising cargo revenues through 2008. In December 2008 BAWC opened a perishables handling centre in Barbados for transshipment (goods loaded off one plane and onto another) for produce including flowers from Colombia.³⁹ BAWC added new

services early in 2009 including an additional weekly service to Chicago, although recently it has reported reducing volumes and revenue. In March 2009 BAWC was considering moving its freighter operations to Kent, but decided to remain at Stansted.⁴⁰

2 Forecasts and growth plans

2.1 Fallible freight forecasts

UK AIR FREIGHT FLATLINES

Passenger numbers at UK airports rose consistently since 1991, reaching 235 million in 2008. In spite of recession towards the end of 2008, there was only a 1.9 per cent reduction compared to 2007. Passenger figures have fallen at most UK airports during 2009. UK freight tonnage figures in this report are from the CAA, the UK's independent aviation regulator, unless otherwise stated. UK air freight grew rapidly from 1970 through the 1980's and doubled in 1990's. In 2003, the DfT forecast that freight growth would 'grow even more rapidly over the next decade'.⁴¹ In reality, UK air freight has stabilised in the last ten years. UK air freight totalled 2,282,153 tonnes in 2008, a decline of 2 per cent from 2007. In addition, 234,015 tonnes of mail was air freighted in the UK in 2008.

The Future of Air Transport White Paper (ATWP) published by the DfT in December 2003 tracked air UK air freight growth from 580,000 tonnes in 1970, rising to 2.2 million tonnes in 2002.⁴² The ATWP is a 'strategic framework for the development of airport capacity in the United Kingdom over the next 30 years'. The ATWP recommended that airport operators produce or update Masterplans detailing development proposals, to 2015 in some detail, and indicative land uses from 2016 to 2030.⁴³ Writing in their chapter entitled 'Aviation Coalitions' in the book *Aviation and Climate Change*, Sarah Mander and Sally Randles put the case that 'the AWP sets out a clear mandate for expansion based on an economic argument. Airports are required to develop master plans that meet a specified level of passenger demand'.⁴⁴

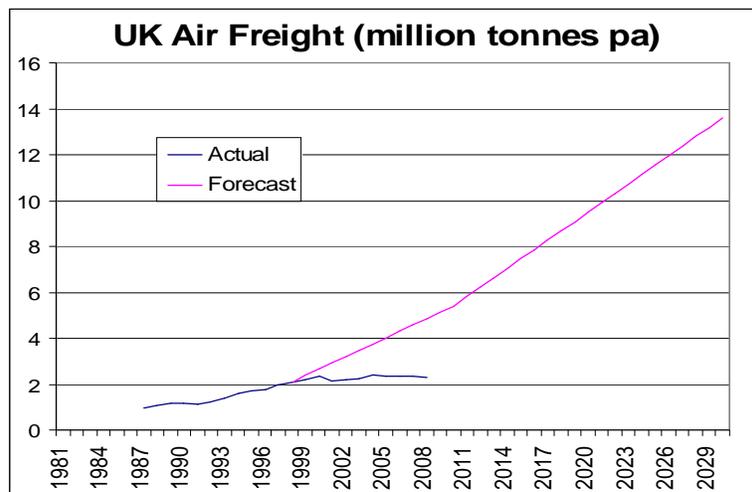
The DfT 2003 consultation *The Future Development of Air Transport in the United Kingdom: South East* contained major freight forecast growth forecasts that following a doubling of UK air freight in the decade to 1999, growth in the subsequent decade to 2009 would be even more rapid. (No specifics are given for UK wide freight forecasts in this or subsequent DfT publications.) Air freight demand forecasts were for 8.5 per cent annual growth to a total of 5.4 million tonnes by 2010, 5.8 per cent annual growth to 2020 reaching 9.5 million tonnes in that year, then 3.7 per cent annual growth to a total of 13.6 million tonnes in 2030.⁴⁵ So far in 2009 UK air cargo is down by at least 10%. The divergence between forecast and actual air freight volumes is widening.

UK CARGO REPORTING

The DfT *The air freight end-to-end journey* report contains HM Revenue & Customs (HMRC) overseas trade statistics for air freight. For UK air freight outside the EU, 'Machinery and transport equipment' is the largest export category by weight and volume at 41 per cent and 53 per cent respectively. 'Miscellaneous manufactured articles' and 'Manufactured goods classified by material' make up 45 per cent of UK air freight exports by value, with a mere 1 per cent consisting of 'food and live animals' and 0.5 per cent categorised as 'other'. The UK imports more crude materials, chemicals, fuel and food and live animals than it exports, and exports more machinery and transport equipment than it imports.⁴⁶ UK air freight exports outside the EU have a higher value:weight ratio than imports. Less information is recorded by HMRC on air freight within the EU, as the goods are not subject to EU controls, although the nature, value and weight of the goods are recorded.⁴⁷

Globally, load factors are reported by the ICAO on a regional basis, so statistics for the UK are aggregated with those for Europe as a whole. UK airports report monthly and annual freight and mail tonnage to the CAA. Each airport reports the number of aircraft of both passenger and cargo configuration, and the number of scheduled and chartered aircraft. The number of passenger and cargo aircraft, domestic, EU and other international is also reported. Regarding operators (airlines), the tonnage for UK, other EU countries and overseas outside the EU is reported along with the tonnage of cargo that is set down and picked up. UK groups opposing air freight expansion have had their requests for more detailed information on what freight actually consists of met with claims of commercial confidentiality and difficulty in reporting consolidated loads of many shipments that can originate from more than one firm. Whilst there may be a case for a degree of commercial confidentiality, this need not be compromised by reporting throughput of basic cargo categories, and load factors in the case of airlines.

UK AIR FREIGHT – ACTUAL VERSUS FORECAST



The ATWP suggests freight forecasts for individual airports, but does not include a UK wide freight forecast. Air freight Actual statistics are from the CAA. UK air freight Forecast statistics are taken from the DfT consultation *The Future of Air Transport, South and South East, Main Consultation*.⁴⁸ (Research and graph by **Paul Grimley**)

GLOBAL AIR FREIGHT GROWTH

Heathrow Airport currently handles the most UK cargo. In 2008 a throughput of 1,397,054 tonnes represented over 60 per cent of the UK total, by weight. Whilst Heathrow clings to its rank as the world's busiest in terms of international passenger traffic, it is less of a giant in terms of being a freight hub, ranking only 16th globally with Memphis in the US and Hong Kong vying for first place each with throughputs approaching 3,700,00 tonnes. Within Europe, Heathrow's volumes are also lower than Charles de Gaulle in France and Frankfurt in Germany which each handled over 2 million tonnes, and Schiphol (Amsterdam) which handled over 1,600,000 tonnes, in 2007.⁴⁹

While UK freight volumes have been stable for a decade, global air freight maintained steady growth until late in 2008. Globally, air freight climbed to a high of 88.5 million tones in 2007, the 3.2 per cent growth

rate down slightly on 2006 freight growth rate of 3.6 per cent.⁵⁰ Until the recession, air freight was predicted to grow more than passenger flights. Predictions by Boeing and Airbus, the two major aircraft manufacturers, that passenger numbers would increase by about five per cent per year, and freight volumes by six per cent formed the basis of aviation expansion plans around the world. These small percentages may not sound significant to the non-mathematically minded, but would add up to passengers doubling over the next twenty years, with freight tonnage tripling.⁵¹

UK airport expansion plans are dwarfed by ambitious freight expansion overseas including Frankfurt, Schiphol and Charles de Gaulle in continental Europe. The new airport in Dubai, Al Maktoum, plans for a freight throughput of 12 million tonnes. The UK is indeed falling 'behind' in air freight capacity compared to construction overseas. However, this could offer the opportunity to shift the emphasis to road, rail and shipping using less fossil fuels, with lower greenhouse gas emissions.

2.2 Air freight and the recession

OIL PRICE SPIKE

Throughout the oil price spike in 2008 air passenger numbers and freight kept rising, even as the oil price peaked at its highest ever in July. Globally air freight was rising faster than passenger flights until the recession, and was slow to get caught up in the economic downturn. Air freight sustained its growth for first nine months of 2008. Volumes began to decline in the final quarter of 2008, but not the dramatic downturn affecting many other industries like construction and car manufacturing. For 2008 as a whole, global air cargo volumes were just 3.6 per cent lower than the previous year.⁵²

The practice of hedging, buying fuel up to a year or more in advance, helped many airlines keep their fuel bills down. Air freight can be more affected by fuel price as this forms a higher proportion of operating costs than passenger flights. For example, Professor Peter Morrell of Cranfield University compares fuel costs of 38 per cent of operating costs for all-cargo airline Cargolux compared to 25 per cent for passenger airline Virgin Atlantic.⁵³

Cancelled routes and carriers going bankrupt hit the headlines, but only two major carriers went out of business in 2008.⁵⁴ Several smaller airlines reported to be facing closure were soon flying again with new investors and a wave of mergers and acquisitions. For example in June 2008 MK Airlines, based at Kent, briefly grounded its fleet and administrators were called in, but the airline resumed operations within days following a deal with a new investor.⁵⁵ Aviation growth is not historically as sensitive to the oil price as might be expected, seen in the context that globally aviation, including freight, had maintained growth for five consecutive years since 2003, after recovering from the post 9/11 slump, the growth concurrent with a rising oil price.

FREIGHT VOLUMES PLUMMET

Air freight volumes began to plummet in the depths of the recession in early 2009. The decline has been dramatic at many UK airports. For example, Gatwick's 2008 volumes were down 37 per cent compared to 2007. Manchester reported a 43 per cent year-on-year reduction in February 2009. Press reports of declining air freight volumes at UK airports sound enormous with reductions of over 20 per cent, but the monthly figures are year-on-year comparisons, the monthly tonnage compared to the same month the

previous year, so the reports represent a continuing dip in air freight, not an on-going plummeting month after month.

Air freight maintained a growth rate for the first half of 2008, but there was a year-on-year decline of 1.5 per cent in the third quarter and 9.7 per cent in the fourth quarter. For the year 2008 as a whole cargo tonnage at UK airports fell by 0.7 per cent.⁵⁶ A number of UK airports maintained cargo tonnage growth for 2008, including Heathrow where volumes grew by 7 per cent, and Luton with 6 per cent growth.

In February 2009 it was reported that 2,300 planes, passenger and cargo, a record number, are parked in the desert, 11 per cent of the global fleet.⁵⁷ Ian Tutzger reported in *Cargo News Asia* that airlines are undertaking capacity reduction in the face of reducing cargo yields.⁵⁸ Load factors, the percentage of passenger seats or freight space that is filled, were reported to be falling faster than capacity reduction with planes being taken out of service. This resulted in more wasted cargo space and wasted fuel. BAWC reported a load factor reduction of 5.5 per cent for March 2009.⁵⁹

Aviation industry bodies predict that growth will quickly resume its upward trajectory as the global economy begins to show signs of recovery from the recession. Whilst the future for all sectors of the economy is uncertain, aviation has a history of recovering quickly from dramatically plummeting volumes to resume its growth path, for example after the terrorist attacks of 9/11, SARS and previous recessions. Without the passengers to deal with, air freight can be less severely affected than passenger services by heightened security and concerns over the spread of infectious disease. In June 2009, Boeing was still predicting long term freight growth of 5.3 per cent per year, so tripling over the next 20 years, with the freighter fleet to increase by two-thirds from 1,940 to 3,250.⁶⁰

One reason for aviation's track record of quickly resuming its growth path after a recession is government bailouts and loans to airports and airlines. This is evident in 2009 with financial support packages agreed or under consideration in many countries including flag carriers in India, Japan and Canada and for several Chinese airlines. Injections of public funding for airport cargo facilities include a relief package with a Cargo Incentive Scheme for Changi Airfreight Centre in Singapore.⁶¹ In the UK, Business Secretary Lord Mandelson announced a £340m loan to support the manufacturing of Airbus A350 wings in Bristol in August 2009.⁶²

SHIFTING FREIGHT FLOWS

Throughout the oil price spike and the subsequent recession there has been a shift of traffic to the Middle East airports where massive investment in airport infrastructure expansion is ongoing. Several Middle East carriers including Emirates Airlines and Etihad Airways reported high cargo growth for 2008 continuing into 2009. Emirates Airlines' recent growth includes bellyhold cargo at Newcastle Airport.

2.3 Freight growth plans continue

AVIATION GROWTH COALITIONS

Writing in *Aviation and Climate Change*, Sarah Mander and Sally Randles describe the ATWP as 'policy support for decades of air traffic growth' with 'coalitions of actors' encompassing many commercial and

government bodies working to achieve the expansion agenda set out in the ATWP. The participants are airlines, airports, manufacturers and government actors on a variety of scales.⁶³

In addition to Regional Development Authorities (RDAs) and government at all levels from national to local authorities, airport expansion is explicitly supported by the City Regions which work across local authority boundaries for strategic planning, and have been most fully developed in the north of England. For example, in the Manchester City region, Manchester Airport is highlighted at the top of the list of the economic assets and its expansion is top of the list for priorities and objectives.⁶⁴

The DfT's *Future of Air Transport Progress Report*, published in December 2006, updating the progress of the Air Transport White Paper (ATWP) of 2003, highlights 'increasing trade and air freight transport' as one of four key drivers of aviation expansion. The other factors identified are 'international competitiveness', 'aviation's direct contribution to economic development' and 'people's aspiration to travel'.⁶⁵ Yet there is very little information in DfT reports or Masterplans about freight growth beyond tonnage targets. There is very little information about what cargo categories this freight growth is anticipated to consist of. More broadly, policy makers and the media frame the aviation expansion debate as 'air travel' as if it only consists of passenger flights, sidelining the freight issue.

The language used in Masterplans infers that growth is based on meeting demand projections, and that capacity is being expanded to accommodate inevitable growth. For example, Glasgow Prestwick's Masterplan states that it is to 'accommodate the likely increase in passenger and freight traffic'. Yet later in the Masterplan the language indicates that the facilities aim to generate growth and Chapter 5 is entitled 'Our plans to achieve growth' which includes a section on 'Achieving Freight and MRO Growth'.

As with passenger flights, advocates of expanding freight capacity in the UK argue that demand constraint is futile because restricting capacity or increasing costs through measures such as a freight tax would result in flights and hub operations moving to continental Europe, thus losing out on capturing high value air freight trade flows. This is followed with the argument that as the freight growth will occur elsewhere, net GHG emissions will not be reduced. Some airports put the case that air freight expansion would reduce the emissions from connecting flights or road journeys to airports further away from the point of origin. For example, Carlisle Airport developers Stobart claim that growth of the airport could result in reduced carbon emissions because of flying directly from Carlisle instead of road transport to nearby airports like Newcastle.⁶⁶

PLANS TO DOUBLE CARGO BY 2015, TRIPLE BY 2030

In the face of the economic downturn, with freight volumes plummeting, airports throughout the UK have not reconsidered or scaled down freight expansion plans. The 'paradox of aviation' noted by Airport Watch and Aviation Environment Federation, with expansion plans in the face of declining passenger numbers, also applies to freight with growth plans published and infrastructure development underway as volumes contract.

The table in the supplement to this report, *An Airport-by-Airport outline of the freight picture at each of the UK's airports*, lists air freight expansion planned and underway that is known to the author of this report. This consists of freight growth plans as stated in Masterplans and other announcements. The air freight growth plans add up to an additional 2,720,280 tonnes between 2007 and 2015, so total freight would

almost double in this time frame to 5,045,515 tonnes. By 2030 an additional 4,959,445 tonnes would bring the total to 7,284,684 tonnes.⁶⁷ Air freight would almost triple from 2007 levels by 2030 if this capacity expansion is built and becomes fully operational. This calculation is based on the 2007 freight throughput as a baseline, as the 2008 slight tonnage decline is regarded by the industry as a short term blip. This is an underestimate of actual freight growth plans as it does not include airports where the intention to increase freight is stated, but no target tonnage is given, including airports with a business or logistics park in development on or adjoining the airport site. If long term trends of stabilisation and recent decline continue, these air freight growth plans will widen the disparity between growth predictions and actual freight volumes.

REGIONAL AIRPORTS

The ATWP states that ‘we want to encourage growth at regional airports’, and the planned expansion of air freight infrastructure is predominantly at regional airports, shifting the emphasis away from Heathrow.⁶⁸ Throughout the UK there has been a consolidation of freight growth at specific regional airports, in particular East Midlands and Manchester, with several other regional airports reporting a substantial decrease in freight over the last decade, including Birmingham, Liverpool and Glasgow. Reports of freight growth at regional airports are often not as significant as they might first appear. Press releases from airport operators may state dramatic monthly percentage growth in freight, which in reality is frequently due to a few ad hoc charters and does not reflect a consistent growth trend. A few regional airports with low freight volumes plan to multiply freight volumes by several multitudes; Kent plans an almost 20 fold increase to 500,000 tonnes by 2033, Robin Hood an eighty fold increase to 120,000 tonnes by 2030 and Liverpool a nearly 60 fold increase to 220,000 tonnes by 2030. Smaller regional airports, such as Robin Hood and Durham Tees, converted from military airports to civilian purposes already have lengthy runways which can accommodate enormous freighter planes like the An-124.

Freight growth is not known to be planned at several small, regional UK airports with cargo under 1,000 tonnes per year including Bristol, Southampton and Blackpool.

PLANNING LOOPHOLES

In *Aviation and Climate Change*, Sarah Mander and Sally Randles write that ‘For a specific airport, master plans set out the strategic framework to meet a given level of capacity, and these become normalized through inclusion in statutory plans at other scales’.⁶⁹ Concerns are raised that the airport master plans bypass democratic processes by default ‘As master plans diffuse into statutory development plans at the local and regional scale, these demand-led assumptions will become normalized and will achieve legitimacy without being subject to broader democratic debate’.⁷⁰

The Aviation Environment Federation (AEF) highlighted that many airports in England and Wales benefit from permitted development rights under Part 18 of the General Permitted Development Order. This allows operators to undertake significant development without planning permission. This encompasses development that can be directly freight related including operational buildings and aprons on land within the airport perimeter. Originally envisaged as enabling safety improvements, the planning loophole is being used for commercial gain. AEF recommends that development on airport sites should be subject to the normal planning process, raising the threshold for qualification so that it applies only to large international airports.⁷¹

AIRPORT BUSINESS PARKS

Lax planning regulation could be relevant to the business parks which are planned or in development at Robin Hood, Newcastle, Inverness, Carlisle, Southend, Durham Tees, Belfast and Bournemouth airports. In many instances, land is already available on the airport site, for example Newcastle's Southside Development, or development is taking place on land outside the airport perimeter in the case of Inverness Airport Business Park. The airport business parks are airport centric rather than airport specific. Provision of generic business space supports other industries in addition to air freight and aviation related industries, with access to road networks supporting growth of road freight as well as potentially increasing air freight. A number of new or expanding freight facilities and business parks are being built or planned on agricultural land, for example Robin Hood, Glasgow, Inverness, Edinburgh, Newcastle, possibly expanding onto agricultural tenancies at Carlisle, and on 800 hectares of countryside surrounding Stansted. This is asphaltting over more green space and further increasing UK's dependence on food imports.

LACK OF INFORMATION ON FREIGHT PLANS

Several Masterplans include freight growth plans, but very little information is given. In some instances, such as Humberside, a target tonnage is not stated. Some Masterplans do not make a distinction between freight and mail. Anticipated growth in bellyhold cargo is substantial but not quantified in Masterplans in some instances. For example, a DfT 2003 projection for Heathrow stated that if bellyhold capacity was to be fully utilised throughput would rise to 'around 2 million tonnes'.⁷² This level of growth would entail an approximately 50 per cent increase over Heathrow's freight volumes in recent years. Birmingham and Exeter Masterplans also specify, but do not quantify, belly freight growth. Development of Maintenance, Repair and Overhaul (MRO) facilities, such as at Glasgow Prestwick, Kent and Inverness, is likely to increase air freight as aircraft manufacture and maintenance is highly dependent on air freight.

Some Masterplans including Edinburgh and Leeds Bradford claim that freight growth will be determined by whether an operator makes the decision to locate there. There is vagueness around Stobart's freight plans at Southend airport, announcing development of unspecified 'niche' services and contradictory reports both stating and denying that plans will increase air freight and develop as an air freight hub.

Aside from the smaller regional airports where the cargo growth is anticipated to be predominantly mail, Masterplans rarely specify what this cargo increase is projected to consist of even to the extent of identifying specific industry sectors, or how it is to be achieved. The few instances of Masterplans giving details of anticipated freight growth sectors include Humberside highlighting the perishable food sector and Aberdeen specifying continued support for the oil and gas sector.

In some instances regional airports, including Carlisle and Durham Tees, plan to increase freight capacity but are not obliged to produce a Masterplan, as passenger numbers fall below the threshold,.

2.4 Routes, modes

LONG HAUL, SHORT HAUL & TRANSHIPMENT

Only a small proportion of air freight is domestic flights within the UK, at 107,227 tonnes just 5 per cent in 2008. Air freight within the EU accounted for 248,722 tonnes in 2007, just over ten per cent of the 2,325,772 tonne total.⁷³ Short haul air freight would be easier to shift to land transportation than long haul, but there are recent reports of increased short-haul air freight, for example in January 2007 BAWC increased its European short-haul freighter service by 40 per cent. The new schedule increased services from 32 to 45 weekly services across 11 European destinations, and subsequently made further additions of Leipzig and Gothenburg to the network.⁷⁴

The primary routes for UK air freight are imports from and exports to the US, and trade with Asia which is dominated by imports. Imports from Africa in 2008 at 109,954 tonnes are almost double the exports of 60,485 tonnes.⁷⁵ An estimated 15 per cent of all UK air cargo is transshipment, arriving in one aircraft and being unloaded and loaded onto another aircraft.⁷⁶ It is argued that transshipment is important to keep the hub operation business of carriers such as BAWC and Virgin. BAWC transshipment levels at Heathrow are about 70 per cent, compared to the flag carriers of other countries at Heathrow with transshipment levels of between 20 and 30 per cent.⁷⁷

MULTIMODAL SUPPLY CHAINS

The supply chain is often convoluted; the distance freight travels far exceeding the distance between the starting point and destination. Supply chains are multimodal with legs of shipping and trucking, so that even if consumer goods, components, heavyweight machinery or other types of cargo do not take off from or land at a UK airport, there could be air freight at some point in the supply chain. Goods for export are trucked from the UK to continental European airport hubs, consumer goods land in continental Europe and are then trucked to the UK. For example flowers from Africa landing at Schiphol in the Netherlands are trucked all over Europe including to the UK.

The logistics sector as a whole is growing and the modes of transport are not just in competition but growing simultaneously and are to a certain extent interdependent. Even the most comprehensive air network involves land legs to reach the final destination. Many airports are multimodal and also the key nodes for road and sometimes rail networks. For example, Leeds-Bradford handled just 88 tonnes of air freight in 2004, with 3,623 tonnes moved by road mostly to and from other UK airports including Heathrow and Manchester.⁷⁸ Approximately half the goods transported between Heathrow and continental Europe are trucked by road, with airlines typically sending between 3 and 15 trucks per day.⁷⁹ Carriers including Emirates Airlines and Coyne Airways operate trucking networks. There are enormous port developments in the UK, for example, Liverpool Airport is part of Ocean Gateway. Dubai ports operator DP World is scheduled to open what it claims will be Europe's biggest logistics park in Thurrock on the River Thames in time for the London Olympics in 2012.⁸⁰

Goods trucked to and from continental Europe covered by the EU Customs Code can be carried under a single Air Waybill provided that they are securely transported by truck. This precludes transport of air freight by rail as, under current law, rail freight carriages cannot carry Air Waybills. A network of road distribution centres has been built and there is a lack of rail interchanges at airports.⁸¹ This hinders the

development of an integrated freight transport systems facilitating a shift from road to rail, which is less polluting than road.

AIR FREIGHT DRIVERS - HIGH VALUE & SPEED

The two key reasons for air freighting goods rather than using other modes are that the goods are high value, and the advantage of speed. Investigation of the complexities of both these drivers could help enable modal shift to reduce environmental damage. There are distinctions within the generalisation that air freight consists of high-value goods. The DfT *The air freight end-to-end journey* report divides air freighted goods into three categories: 'time-sensitive' including perishable foods, 'process critical' including medicines and machine parts and 'very high-value' including high-tech goods and gems.⁸² This is a useful typology, but the air freight, albeit frequently on an ad hoc basis, of such a wide range of consumer goods, and industrial equipment for manufacturing, infrastructure development and resource extraction, indicates that these definitions are highly subjective and that business processes and pressures are major drivers of air freight growth, rather than any inherent time critical nature of the goods.

The possibility that speed is not necessarily the key driver for air freight growth, and that other factors of reliability and security discourage shippers from using other modes, is worth exploring. In their response to the Midlands Aviation Masterplan, West Midlands FoE countered the argument that speed is of the utmost importance to business with the findings of a 2004 survey by the International Logistics Quality Institute that just ten per cent of express air freight is time critical, with the 'vast majority' of customers choosing express air freight delivery for dependability and security rather than speed.⁸³

MULTIMODAL GROWTH

In December 2008 the DfT published *Delivering a Sustainable Transport System: The Logistics Perspective*, which announced an increased emphasis on support for UK logistics sector.⁸⁴ This report noted that the distance that goods are travelling is increasing more quickly than the volume of goods transported. Road dominates transportation of goods within the UK accounting for two thirds of the goods moved. Rail freight has increased by almost 50 per cent in the last decade, bringing it to a level not seen since the 1970's. The report states that government seeks to enable 'behavioural change, including the transfer from road to rail and water'.⁸⁵ This statement is not extended to a commitment to encourage a transfer from air to other modes, although the potential for consumer awareness of greenhouse gas emissions from air freight to lead to pressure for a decrease in the use of air freight for transporting food is mentioned.

Whilst the volume of air freight is very small in comparison to that which is transported by the other modes of road, rail and shipping, it amounts to 40 per cent by value of UK trade with non-EU countries.⁸⁶ This percentage of the value of trade is in line with the global estimates for the value of air freight, ranging between 35 and 40 per cent of world trade.

UK ports are growing rapidly including new facilities at Port of Immingham and Port of Tyne to accommodate coal imports. New developments at Felixtowe, Barkside Bay (Harwich), London Gateway, Mersey (Seaforth) and Teesport have all received planning permission and in total these developments have the potential for capacity to double container traffic.⁸⁷ Air freight capacity expansion is not even

mentioned in the DfT *Delivering a Sustainable Transport System* report, even though it is supported and subsidised by several government agencies as outlined in Section 3.3 of this report.

In 2007, air freight constituted less than 1 per cent of the weight of the 459 million tonnes UK international freight, with 4 per cent by the Channel and 95 per cent by sea.⁸⁸ Even the largest freighter planes are dwarfed by the enormous 'post-Panamax' maritime vessels shipping bulk raw materials including metals, minerals, timber and fuel. Globally, shipping growth could be marginally higher than air freight growth. Although there are reports of a shift to sea freight for cost reasons, with the anticipated upward trajectory of the oil price and slowdown in global trade, the overall picture is more mixed. A report by Seabury in *Air Cargo World* in December 2008 showed that growth of ocean freight volumes has exceeded that of air freight over the last few years, but not by a large proportion, giving the example of only 4 per cent of weight in 2001. This was largely replaced by 'successive waves of new products' in particular consumer electronics.⁸⁹

3 Environmental, social and economic impacts

3.1 Environmental and social impacts of air freight

GHG EMISSIONS OF AIR FREIGHT

While it is the case that the proportion of goods that are air freighted is small compared to other modes, the environmental impacts are disproportionate. There is a widespread consensus that air freight emits more GHGs per unit carried than other modes. Defra has calculated the CO₂ emissions per tonne kilometre, for the long haul flights which make up the majority of air freight, as approximately 4.6 times those of road transport, approximately 29 times those of rail transport and between 30 and over 150 times those of shipping. The CO₂ emissions of shipping vary widely, in particular depending on the size of the vessel, with the larger ships generally being more fuel efficient.⁹⁰

The IPCC calculated the global contribution of aviation to greenhouse gas emissions as 4.9 per cent of human induced climate change. This is significantly higher than the 2 per cent repeatedly stated by the aviation industry. The larger figure includes the impact of radiative forcing, with aviation's emissions at high altitude having more impact on the climate. Aviation is an especially important issue for the UK's GHG reduction strategy as the DfT estimated it accounts for 6.3 per cent of emissions.⁹¹ In order to meet the UK's carbon emission reduction targets of 80 per cent by 2050.⁹² The Committee on Climate Change estimates that, in order to offset aviation's rising emissions, all other sectors would have to reduce their emissions by 90 per cent.⁹³

Aviation industry bodies acknowledge that it is difficult to disaggregate cargo from passenger flights to assess the GHG emissions separately, especially when considering freight carried as bellyhold. Professor Peter Morrell of Cranfield University estimated that air cargo accounts for approximately 25 per cent of global use of aviation fuel.⁹⁴ In a presentation to the TIACA International Air Cargo Forum in Kuala Lumpur in November 2008, Andrew Herdman, Director General of the Association of Asia Pacific Airlines, estimated that air cargo accounts for approximately 120 million tonnes of CO₂ emissions per year, approximately 20 per cent of the total global aviation emissions of 650 million tonnes.⁹⁵

FLYING FOOD & FLOWERS – A HOT TOPIC

The only air cargo category which has attracted substantial media attention is food and flowers. Several studies have aimed to calculate the greenhouse gas emissions of different modes of transportation and their importance in the wider context of the other emissions of the supply chain such as farming and processing. The Validity of Food Miles as an Indicator of Sustainable Development, a study undertaken for Defra in 2005, showed disproportionate impacts of air freight. Although air freight only accounted for one per cent of food tonne kilometres of food imports, this small proportion was estimated to account for 11 per cent of food transport CO₂ equivalent emissions.⁹⁶

This study's methodology, subsequently used for Defra's food transport indicators statistics, did not capture the food that arrives in the UK by a multimodal supply chains landing in continental Europe then trucked or shipped here. The methodology also assumed that there was one direct flight from the capital of the country of origin of the produce.⁹⁷ In fact there can be multiple connecting flights for UK terminating

perishable produce, with transshipment occurring at airports all over the world including Dubai, Colombo in Sri Lanka, Nairobi, Barbados and Cairo. There can also be internal flights in the country of origin to an export hub, such as to Mumbai in India. Produce is often transported, by road feeder network or a connecting flight, into a neighbouring country such as perishable food and flowers from Arusha and Mwanza in Tanzania into neighbouring Kenya for flying out of Nairobi.

LIMITED EFFICIENCY GAINS

There are comprehensive, ongoing efforts to reduce fuel use and GHG emissions throughout the supply chain for air freight as with other transport modes, including more energy efficient refrigerated containers and reducing the weight of packaging. One example is Kuehne + Nagel working with AIRDEX to create a 3 kg re-usable plastic pallet.⁹⁸ Further improvements in aviation fuel efficiency are proving difficult to achieve. Whilst UK policy supports aviation expansion on the basis that step changes in aircraft fuel efficiency will be made, the reality is that improvements are close to diminishing returns. Writing in *Aviation and Climate Change* Staefan Gosling and Paul Upham estimate that a more accurate projection of efficiency gains might be annual savings of around 1 - 1.5 per cent.⁹⁹ In September 2009, IATA presented a paper outlining the aviation industry's commitments to CO₂ reduction which included a 1 – 1.5 per cent average annual improvement in fuel efficiency to 2020.¹⁰⁰ Also in *Aviation and Climate Change*, Cordula Neiberger estimates that improvements in technical efficiency of aviation will be outpaced by growth. Efficiency gains are estimated at between one and two per cent per year, while volume growth is approximately six per cent per year. Therefore, annual growth in GHG emissions from air freight can be estimated at four per cent per year, so 'growth in this sector is thus in contrast to global emission reduction goals, and in terms of growth, possibly even more relevant than passenger transport'.¹⁰¹

Whilst carriers are highly motivated to maximise revenues with full payloads, other factors including the pressure for speed and global trade imbalances mean that air freight capacity is frequently underutilised. The International Air Transport Association (IATA) reported an international cargo load factor of 75.9 per cent for 2008.¹⁰² Lower load factors are far from unusual. A report by Seabury in *Air Cargo World* in December 2008 anticipates that trade lane imbalances which are the 'result of underlying imbalances of consumption and production' will widen in most cases. This includes between China and Europe and the US, where, for every three to five kilogrammes air freighted from China, just one kilogramme is flown in the returning direction, so the load factors of planes returning to China are significantly lower than those supplying us with Chinese imported goods.¹⁰³

LOCALISED ENVIRONMENTAL IMPACTS

Along with aviation's contribution to the long term global environmental problem of climate change, there are localised, short-term environmental impacts which are worst for communities living near airports. Localised ground level pollution from airports along with the land transportation from road and rail networks converging at multimodal hubs brings a cocktail of pollutants including nitrogen oxides, sulphur dioxide which irritates the lungs and is associated with bronchitis, carbon monoxide, ground level ozone which impairs lung function and aggravates chronic lung diseases and VOCs (Volatile Organic Compounds) unburned hydrocarbons, benzene and formaldehyde.

Air freight leads to particular noise problems as older, less efficient and noisier passenger planes are often converted to freighters. There is relentless pressure for more night flights, already unrestricted at East Midlands, with plans to increase at airports including Robin Hood. Airports sometimes manage to present an argument that expansion for air cargo will reduce noise impacts. For example, for East Midlands Airport, Neil Robinson, the site's environmental manager, claimed that the lengthening of the runway will actually reduce noise as the planes will be able to approach the runway at higher altitudes over the nearby village of Kegworth.¹⁰⁴ The improvement in noise impacts of individual flights is likely to be dwarfed by the increase in noise that the overall expansion of the airport, aiming to increase cargo volumes almost tenfold by 2030, would enable. Glasgow Airport's Masterplan counters concerns that development of cargo facilities would increase the noise problems already suffered by the Kirklandneuk and Renfrew communities with the claim that the new cargo and maintenance facility 'will have the potential to act as a noise barrier'.¹⁰⁵

CARGO CRASHES

Old cargo planes have a poor safety record in Africa, with frequent accidents killing crew and people on the ground. These accidents are rarely reported in the mainstream UK media. Reporting in *The Telegraph* on yet another crash of a cargo plane near the runway of Kinshasa in the Democratic Republic of Congo in October 2007, this time into a market, Matthew Moore writes that 'Air travel in Africa, and in the Congo in particular, is a notoriously dangerous business. Many African airlines are shambolic outfits... Their ageing Antonovs and Boeing 707s crash with alarming regularity'.¹⁰⁶ This appalling safety record extends to humanitarian aid as outlined in the May 2009 SIPRI report *Air Transport and Destabilizing Commodity Flows*, documenting that many cargo carriers involved in EU and UN humanitarian aid missions are banned from EU airspace on safety grounds, and highlight recent crashes with fatalities in Darfur, Somalia and Uganda.¹⁰⁷

3.2 Economic impacts

ECONOMIC GROWTH & JOB CREATION

The environmental damage of air freight is supposedly compensated for by economic benefits, as aviation expansion is seen as a driver for economic growth. The evidence base for this is thin, questionable and out of date. While UK air passenger growth has continued its upward trajectory, air freight has flatlined over the past decade, whilst Gross Domestic Product (GDP) has risen consistently until the third quarter of 2008. The case for a causal relationship, or even a correlation, between air freight growth and GDP growth appear to be even weaker than for passenger flight growth.

Government analysis of the economic impacts of air freight appears to be out of date and overdue for revision, with the DfT *The air freight end-to-end journey* report stating that the most recent comprehensive study on behalf of the department was conducted in 1996. This estimated a GDP contribution of about £5 billion over the next 20 years.

Job creation is the second key economic benefit attributed to aviation expansion including freight, and the same study estimated employment of between 40,000 and 55,000 people.¹⁰⁸ A more recent study by OEF (Oxford Economic Forecasting) quoted in the DfT report calculated a GDP contribution of £900 million to

the economy in 2004, from the express service alone, claiming a 'catalytic impact' on the rest of the economy totally £1.3 billion per year. The study found 32,000 people employed by the express industry in 2006 supporting at least 72,000 jobs nationally.¹⁰⁹

New airport freight facilities do not appear to be encouraging for employment creation. The proposed development of two new cargo sheds at Manchester Airport would cover an area of over 9 hectares and claims it would create 60 jobs, which is markedly low employment density. The Pangaeon perishables centre at Manchester Airport had a team of just three people before it ceased trading in March 2009, which raises the issue of the security of any jobs created, particularly in the volatile economic climate. There is also the issue of whether freight facilities are utilised as envisaged. The perishables hub at Humberside at 930 sq metres was predicted to employ just six people.¹¹⁰ The facility opened in November 2008, but just two months later it was reported that flights of fish had decreased to just one per week.¹¹¹ It is often stated that along with the actual airport facilities, employment is created in the supply chain, such as for the aerospace industry at Glasgow Prestwick and the recently announced loan to Airbus. Ironically, so called 'handling' at airports is becoming increasingly mechanised and this extends along the supply chain into logistics so the employment creation claims merit further investigation.

The DfT *Future of Air Transport Progress Report* cites research by OEF, which was carried out for the DfT, Confederation of British Industry (CBI), VisitBritain and a consortium of airlines and airports concluded that access to air services is an important factor for 25 per cent of companies across the whole economy in influencing where they locate their operations within the UK. Access to air services is also claimed to affect the decisions of 10 per cent of companies regarding whether they invest in the UK, and that a similar number of firms also feel that access to overnight air freight services is a vital consideration in operating from the UK.¹¹² In *Airport Jobs: false hopes, cruel hopes* Brendon Sewill dissects the methodology and research findings of the OEF in this survey. The research does not inform the DfT of the views of a meaningful sample of the business community as the survey received a response rate of just 2.75 per cent.¹¹³

AIR FREIGHT REMAINS UN-TAXED

Globally aviation, including cargo, has an advantage over other forms of transport with the Chicago Convention agreement not to tax fuel for international aviation. In *The Hidden Cost of Flying*, in 2003, Brendon Sewill calculated that if aviation paid its full share of public costs including environmental damage, and fair share of the costs of public services, the value of the tax subsidy for the aviation industry totalled £9.2 billion per year.

Air Passenger Duty (APD) brings in less than one tenth of this amount at just £0.9 billion.¹¹⁴ APD is a duty of excise levied on outgoing passengers with some exemptions including small and private aircraft. The Government announced a proposal to replace APD with an Aviation Duty, or "per plane" tax, in its 2007 Pre-Budget Report, with a consultation period beginning in January 2008. The proposed new Aviation Duty would have been levied per aircraft, per flight and would have applied to freighters, transfer passengers who were exempt for APD and empty aircraft. This would have taxed air freight for the first time, as freight aircraft fall outside the APD scheme. The Aviation Duty was expected to come into force in November 2009 as it had cross-party support and several NGO's welcomed the proposal, including Friends of the Earth (FoE) stating that 'this most polluting form of freight transport currently contributes

virtually nothing towards its environmental costs or general taxation' and strong evidence that 'applying fair taxation' to air freight would result in a shift to other modes.¹¹⁵

APD is levied per passenger so does not incentivise airlines to increase their passenger load factor and reduce the number of empty seats. In contrast, Aviation Duty was to be based on maximum take-off weight of the plane, encouraging maximisation of passenger and freight load factors. Aviation Duty was anticipated to raise an additional £520 million per year. The proposed scheme was criticised for not distinguishing between aircraft with different levels of engine efficiency. Opponents argued that the UK risked losing air freight business as the sector can move operations easily and is highly price sensitive. NGO's supporting the introduction of Aviation Duty argued that the time sensitive nature of cargo would balance out increased costs.¹¹⁶

Aviation Duty was shelved in November 2008, with Chancellor Alexander Darling explaining the decision as due to global economic uncertainty, and the belated inclusion of aviation in the EU Emissions Trading Scheme (ETS) from 2012 as a step towards equal treatment compared with other sectors. Instead, APD was reformed with the addition of two distance bands bringing the total to four, set at intervals equidistant at 2,000 miles from London. The levy is now based on a Standard Rate for premium seats with a Reduced Rate for economy seats, combined with the distance measure. The APD rate will rise on an annual basis, anticipated to raise revenues of £1.97bn in 2008-09, rising about 50 per cent to £3.06bn in 2011-12. At various stages of the debate on increasing UK aviation taxes, US organisations such as the Air Transport Association lobbied against the proposals, claiming it would not comply with international treaties.

AIR FREIGHT EXPORT DEFICIT

The UK imports more air freight by weight, 57 per cent, than it exports, at 43 per cent in 2007.¹¹⁷ This volume discrepancy in Government statistics shows a gaping export deficit in terms of value as well as weight of non-EU trade. The trade gap is particularly marked in international freight outside the EU. In 2007 the UK exported 414,000 tonnes of air freight to non-EU countries, whilst importing more than four times this amount at 1,663,000 tonnes. Advocates of air freight expansion highlight the economic benefits of high-value exports, but the trade imbalance in terms of value is also marked. The value of the imports was £31.3 billion, whilst the value of the exports was £51.1 billion.¹¹⁸ The air freight deficit outside the EU totals almost £20 billion and the UK value of exports is about 66 per cent more than the value of imports. The category of 'machinery and transport equipment' makes up the majority of trade by value for both imports and exports at 51 per cent and 53 per cent respectively. UK air freight within the EU is more balanced, in 2008 there were 183,179 tonnes of exports and 202,853 tonnes of imports.¹¹⁹

According to the DfT *Future of Air Transport Progress Report 2006* aviation plays a crucial role in the UK's strengths in import and export trade and service industries and is vital to international competitiveness: 'the hi-tech knowledge based sectors of the economy are heavily dependent on aviation to develop and maintain an international client base.'¹²⁰ There are indications that the UK's import / export imbalance could be widening with further collapse of the UK's manufacturing base, with trade press reports for example in an article in *Air Cargo World*, British Airports Authority (BAA), operators of Heathrow, Stansted, Gatwick, Glasgow, Aberdeen, Edinburgh and Southampton airports, said that it was experiencing 'difficulty countering a strong differential between high imports and low export volumes'.¹²¹

The import / export imbalance mirrors the tourism deficit as shown by the Office for National Statistics Overseas Travel and Tourism Statistics in June 2009, with almost double the number of UK residents travelling abroad than the number inbound tourists.¹²² In *The Hidden Cost of Flying*, Brendon Sewill estimated that the UK airport expansion programme could result in a loss of a further 860,000 UK jobs in leisure and recreation.¹²³ In *False Hopes, Cruel Hoax*, published in March 2009, Sewill raised the issue of a 'two-way road', with jobs, investment and other benefits able to flow in both directions of newly opened and expanded routes: 'when a local airport is developed it may become possible to supply the area more cheaply by air from somewhere where they can be mass produced'.¹²⁴ Opening up markets for UK products and for UK based firms to source more cheaply, works both ways. Instead of attracting investment from firms, air freight expansion could facilitate the moving of the UK's remaining manufacturing base abroad to countries with lower labour and operational costs.

3.3 Policy support and subsidies for air freight

NETWORK INFRASTRUCTURE

The DfT *Delivering a Sustainable Transport System: The Logistics Perspective* report claims that freight services and interchanges, namely ports, airports and warehouses are 'in the main, provided by the commercial sector' with the public sector stepping in to provide planning, funding, and provision of the network infrastructure including roads and power supply.¹²⁵ This understates the role of planning, as the provision of space and designation of land function for the freight interchanges constitutes significant government support which enables and drives expansion.

The DfT report *The air freight end-to-end journey* outlines the Highways Agency's programme of improvements to the strategic road network, stating that 'many schemes will help the movement of air freight to and from airports in the UK'. The report includes a list of planned improvements 'which will particularly benefit air freight traffic to and from Heathrow and East Midlands on the strategic road network'. The support extends to research with a 'surface access study for freight to Heathrow' which will identify improvements on behalf of SEEDA (South East England Development Agency), Transport for London, BAA and West London Alliance.¹²⁶ Several airport business parks have benefitted from construction of link roads. For example, Inverness Airport Business Park is adjacent to the airport site, and the European Regional Development Fund (ERDF) and the Highland Council funded a link road which opened in 2006 to provide access.¹²⁷

FUNDING FROM GOVERNMENT AGENCIES

The DfT claim that governmental support is mostly confined to 'network infrastructure' leaving the provision of freight hubs including airports to the commercial sector does not stand up to scrutiny. A report by George Monbiot in *The Guardian* newspaper detailed subsidies of over £80 million over ten years, via government agencies including bodies controlled by the national assemblies and EU funding via unelected RDAs in England, and the Scottish and Welsh national assemblies. While the emphasis of the subsidy highlighted in Monbiot's report is passenger related such as route development and promotion, a considerable proportion is related to freight. At Robin Hood Airport, the Aviation Employment and Training Academy at Directions Finningley, an aviation employment and training academy that trains for qualifications including aircraft engineering, has received over £10 million from RDA Yorkshire Forward.

The aviation overhaul and refurbishment element of this project is likely to increase air freight as aviation MRO is highly dependent on air freight.

Scottish Enterprise funding for Glasgow Prestwick included a £2m grant for a maintenance hangar in 2002 and £267,916 for activities which included international and freight development. RDA One North East provided Newcastle Airport with a total of £2,338,742 towards the development of a business park on the airport grounds, including warehousing, offices a road network and provision of utilities. Carlisle Airport received £45,318 towards an Economic Appraisal of passenger and freight development plans by new airport owners Stobart Air. Southend Airport has also been purchased by Stobart Air and the East of England Development Agency (EEDA) paid £52,520 for a study into the socio-economic impacts of expansion. Monbiot's findings on government funding include instances where agencies subsequently attempt to retrieve funding for programmes that were not completed, sometimes because recipients ceased trading. In relation to freight, the second half of an award of £300,000 to Kent Airport to establish a Border Inspection Post (BIP), truck park and warehousing was not paid as the then owner of the airport went into administration.¹²⁸

ADDITIONAL AIR FREIGHT SUBSIDIES & SUPPORT

There are many instances of public funding, including for freight related facilities, which were not captured by Monbiot's information requests. The director of the Pangaeon perishables handling centre at Manchester Airport stated that the funding for the establishment of the facility included a government loan.¹²⁹ There was EU funding, and support from North Lincolnshire Council, towards the £1.6 million expanded perishables centre at Humberside Airport which opened in November 2008.¹³⁰ Previous to this most recent expansion, the Humberside perishable centre received ongoing support from the Humber Trade Zone initiative led by RDA Yorkshire Forward dating back at least to 2004.

Support for Glasgow Prestwick freight related expansion has been central to the Scotland development agency activity in the area, Scottish Enterprise Ayrshire, including under the Smart, Successful Ayrshire programme. Between 2003 and 2006 funding encompassed development of supply chains for the aerospace and related industries, transport links, research on markets for air freighted shellfish, over £300,000 for BAE Systems' facility at the airport, over £75,000 for development of the airport's Masterplan, £4.7 million of predominantly ERDF funds for the Prestwick International Aerospace Park (PIAP) on an 85 hectare greenfield site and over £300,000 on workforce skills development and employability training with the airport as the primary client.¹³¹ Substantial government agency funding appears to be ongoing as at the time of writing Glasgow Prestwick Airport's website states that 'This cluster of world-class companies and Scottish Enterprise Ayrshire's plan to spend several million pounds to help expand the airport as part of the Glasgow Prestwick Airport Development Zone initiative'.¹³² As with airport business parks in general, the development has the potential to increase air freight, although the development is airport centric rather than airport specific.

Government agency support for aviation expansion extends to staff and administrative time, lobbying and research with a view to accessing further EU funds. These activities are difficult to quantify in monetary terms but are of strategic significance. Ironically, this activity is often, nominally at least, part of GHG emission reduction programmes, which is contradictory with the increased emissions that air freight expansion will entail. For example, in March 2009, the Association of Greater Manchester Authorities

(AGMA) commissioned a £30,000 study to identify carbon emission reductions for Manchester Airport, with a view to identifying interventions in anticipation of further ERDF funding.¹³³ Cumbria Vision and West Lakes Renaissance, two regeneration organisations supported by the North West RDA, lobbied Carlisle City Council to grant planning permission for Stobart Air to develop at Carlisle Airport. The airport development is described as a 'key component of the Britain's Energy Coast™ Masterplan', which aims to 'transform West Cumbria into a major low carbon energy production hub'.¹³⁴

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Researched and written by Rose Bridger

Published by AirportWatch

December 2009

Additional research and contributions by **Sarah Clayton**

With thanks to **Steve Charlish, Paul Grimley, Tim Johnson, Robert Lane, Brian Ross, Brendon Sewill, John Stewart, Graham Stocks, Stig.**

The full report, and the Airport by Airport Outline, are available in electronic form at
www.airportwatch.org.uk/airfreight.php

Cover image by Stig www.shtig.net

AirportWatch gratefully acknowledges the support of the Polden Puckham Charitable Foundation.

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AirportWatch is an umbrella movement uniting the national environmental organisations, the airport community groups, and individuals opposed to unsustainable aviation expansion, and its damaging environmental effects, including climate change