Towards a sustainable aviation industry for the UK

After the Airports Commission

prospect

Contents

Foreword

Prospect prides itself on understanding the sectors its members work in. This enables us to blend our staff and representative expertise to produce powerful narratives about change and its consequences.

Aviation typifies the complex and critical environments in which Prospect members and representatives are key to success. They cover the range of occupations that make the sector work and their expertise is unparalleled.

Anyone who wants to learn more about a sector that is essential to national prosperity should read this report. It examines the interplay between regulation, commercial demands and technological change.

As a union, we are not opposed to change. But we challenge change that is ill thought out, short term and uncoordinated.

This is particularly crucial when resourcing and risk assessment are at the core of delivering safe air travel.

We resolutely put safety first and work to ensure that those who share this view deliver it.

The sector also has to tackle its obligations to the environment, which the travelling public increasingly expect to be addressed.

We want sustainable change that addresses members' legitimate expectations to:

- enjoy good work
- operate in a workplace culture that encourages their development and
- respects the difficult judgements they make daily.

Our members in aviation want us to be a voice on their professional issues, the risks they manage and the value they bring. This report gives new energy to that work and I thank all those in the Prospect community who have contributed to it.

Mike Clancy, Prospect general secretary

Introduction

This paper sets out Prospect's vision of a sustainable aviation sector and identifies the features of a policy and regulatory framework to deliver it – in the UK and internationally.

It was being written just as the Airports Commission published its Final Report of three years of investigation into three options for expanding the UK's aviation capacity (July 2015) – www.gov.uk/government/publications/airports-commission-final-report

But our aim is not to dissect the analysis or the conclusions of the Airports Commission, or to review the evidence in that report.

Rather, this paper highlights the key concerns of Prospect members, focusing on sustainability and a practical approach to solving problems.

It reflects the views of members working within aviation, as well as those with a wider interest in sustainability and the environment – eg agriculture, land use, planning and land management, ecology, conservation, climate and the heritage industry.

Within aviation, Prospect represents air traffic controllers, systems engineers, licensed aircraft engineers, scientists and other specialists in NATS; staff in the Civil Aviation Authority and employees at UK airports and commercial airlines.

In 2014, members at Prospect's 2014 national conference voted to support a motion tabled by the Air Traffic Systems Specialists Branch, which highlighted the government's lack of a "joined-up, sustainable aviation policy and strategy".

It called on Prospect to influence the government and other relevant decision-makers to promote a sustainable aviation policy, with appropriate supporting objectives.

This paper forms part of Prospect's response to that conference decision.

In February 2015 3,500 members shared their views about the aviation industry and their own relationship to it. We refer to the findings at relevant points in this paper. The full findings are at https://library.prospect.org.uk//download/2015/01100.

Actions for safe and sustainable aviation

Governments, regulators, airlines and airport operators' increased focus on cost, and the public's apparent desire to chase the cheapest seats, carry significant risks.

Cutting costs in the name of competitiveness does not represent a safe or sustainable future for any part of the aviation industry.

The drive to cut costs is misguided.

Reduced ticket prices would not help to manage demand on environmental grounds. Savings on safety-related activities are likely to be small and poor value when offset against the risks they will bring.

A sustainable aviation policy should:

- ensure the right balance between safety and reducing costs
- ensure that regulators focus on safety rather than profit
- provide incentives for research and development to improve design and control aviation CO_2 emissions
- explore carbon-offset levies
- include better public and political awareness of safety in the skies
- recognise and tackle the risks of stress and fatigue in the industry
- reject flags of convenience in aviation
- separate the Civil Aviation Authority's economic and safety regulation functions

Chapter 1: Civil aviation – from luxury to commodity

IN ECONOMIC TERMS, air travel is now a commodity rather than a luxury.

The market for air travel is mature. Volumes fluctuate in line with wider economic factors, but long-term growth has stabilised and is broadly in line with GDP growth.

Any drive to cut costs (ie to commodify further) risks:

- service quality/the passenger experience
- safety
- employment standards
- business resilience (profits are under pressure too!)

A brief history

Today's aviation workers operate in a very different world to the one that many entered at the start of their careers.

In the early days, aviation was marked by the presence of national airline carriers.

When European Union liberalisation got under way in the 1980s, all member states other than the UK – which privatised British Airways in 1987 – had financial stakes in their major airlines, also known as their "flag carrier".

In most cases, governments had majority or full state ownership of their airlines (some still do). Air travel was therefore subject to government involvement, especially in relation to route designations.
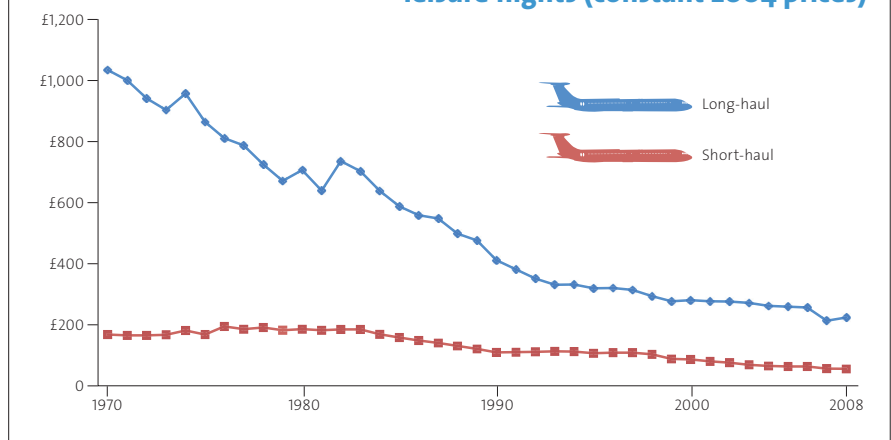
In the UK, BOAC had flown the long-haul routes and BEA the short-haul ones, until both airlines merged into British Airways in 1972.

Smaller airlines existed, and had a higher share of the total market than in other EU member states, but not at a level that provided effective competition on routes.

Bilateral agreements between European member states rigidly controlled flag carriers' routes and their level of capacity.

Many international routes were designed in a way that permitted only one airline from each country to operate, and capped the number of passengers who could fly on them. Flights were to primary airports in or near major cities – frequently the capital – of other countries.

Historically, the airports from which such airlines flew were also in state ownership as public departments or corporations. They provided a transport service, rather than competing with each other to attract passengers and airlines.

Fares were set by agreement between airlines under the auspices of the International Air Transport Association and were notoriously complex. They were also subject to government approval, mainly to protect the national flag carriers' interests.

The only cheap travel options, 'Apex' and 'Super Apex' fares, provided discounts based on advance purchases and a minimum stay – frequently a compulsory Saturday night.

One-way fares were rare, making a three-corner journey (A to B, but returning to A from C) prohibitively expensive.

Tickets were largely sold via intermediary agents who used complex reservation systems. This raised prices substantially through higher distribution costs.

Direct sales to passengers were rare, apart from mainly last-minute sales via small concessionary outlets at airports.

Food and drink was included in the ticket price – in part to preserve the idea of air travel as a luxury.

Flying was a discretionary and glamorous perk, and marketed as such. You had to have money, and no small amount. This gave flying a unique social cachet in the context of a public service.

The exception was the charter airlines, which took growing numbers of people on "package" holidays. They were the first, low-cost carriers, with higher seating density and load factors.

Some companies tried to break the

GRAPH 1

Average fares paid by UK passengers on international leisure flights (constant 2004 prices)

Long-haul

Short-haul

Source: Number of passengers travelling from UK airports to foreign destinations. DfT response to FOI request 10 August 2009

flag carriers' domination, particularly in the UK. One example was Laker Airways, whose no-frills budget service targeted the leisure travel market.

But such efforts were short-lived, largely because the flag carriers controlled routes and take-off and landing slots.

Liberalisation

EU liberalisation, part of a global phenomenon, changed the picture.

The gradual but progressive implementation of a single market introduced competition to aviation – and most other industries within the EU.

Airlines were the first to be affected, but liberalisation is now spreading to air navigation service providers.

The first two liberalisation packages were introduced in 1987 and 1990, but the Third liberalisation package in 1992 really changed things.

The First package relaxed the bilateral framework, with limited "freedoms" for smaller airlines to enter the market and develop services.

The Second package further relaxed the regulations on setting fares and sought to increase market access.

The Third package achieved a substantially liberalised EU market. Government controls on licensing, route access and air fares were replaced by market forces.

By 1996, the intention was to:

- allow carriers from any EU member state to fly any route within the EU

- remove frequency limits and destination controls (subject to airspace and airport capacity) and

- allow airlines to charge whatever they liked.

But this was not a full-blown free market. For example, Ryanair could

fly from Dublin to London and from London to Rome. But governments retained control of airspace and their consumer protection obligations.

In the UK, a new licensing system gave the Civil Aviation Authority the role of issuing, suspending and revoking airline operating licences and approving aircraft leasing arrangements.

Before these developments, coordinating airspace design and management in the EU was handled by EUROCONTROL, a civil and military organisation comprising 38 member states. It was set up in 1960 to develop a pan-European air traffic management system.

In 2004, EUROCONTROL jumped on the liberalisation bandwagon with the EU's Single European Sky policy.

This proposed a single air navigation service charge, based on the cost of providing services. It was brought into force in 2007 for en route charges and in 2010 for terminal charges.

Reform of the system for charging for air traffic services also became a central element of the SES programme.

Under liberalisation, prices have fallen and the range and quality of services has changed markedly in terms of new routes and the overall passenger experience.

The average experience can no longer be described as glamorous, either on airlines or at airports. Air travel as an economic good has moved from a luxury to a commodity.

Liberalisation:
- exploits deregulated markets and drives down labour costs via outsourcing, contracting out, franchising, and restructuring
- involves concerted attacks on trade union organisation
- uses unsustainable competition between companies and countries to drive down labour standards
- results in governments deliberately shrinking their public sectors
- is fixated on costs and unable to cope with imperfect markets.

Prices

The cost of airline travel has fallen dramatically, despite rising fuel prices and increased taxation and surcharges.

By 2010, air fares for both international long-haul and short-haul flights had fallen consistently since the early 1970s (see graph 1).

In the same period, the cost of bus/coach and rail transport rose quite sharply.[1]

Long-haul fares fell by about 75% between 1970 and 2008-09 and short-haul fares by more than two-thirds.

A small change in the late 1990s can be attributed to liberalisation and the entry of low-cost carriers.

Environmental economists would argue that consistently falling prices, especially compared to other forms of public transport, send a worrying signal.

Increased demand and falling prices, especially in the teeth of rising fuel costs, should raise questions about whether liberalisation is sustainable.

1   Air Transport Statistics House of Commons Library, Standard Note SN/SG/3760. bit.ly/air_transport_statistics
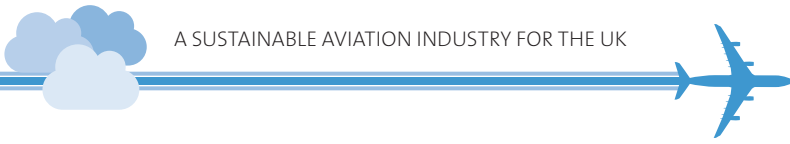
GRAPH 2

Year on year growth in UK-EU passenger traffic
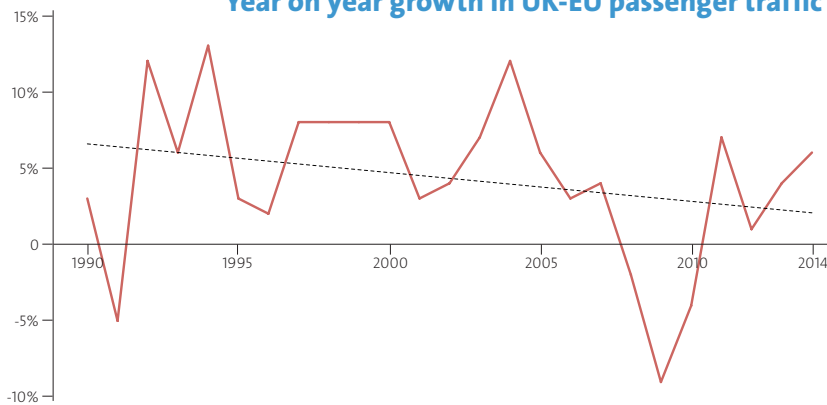
Source: Aviation Economics[3]

A European Commission review of the impact of the Third package in 1999, found that:

- the number of carriers had grown by 24% to 164
- the number of routes had gone up by one third
- fares had dropped by between 10% and 24%, depending on the level of competition on the route.

However, the Commission suggested that the proliferation of tariffs, over-booking, the availability of seats at the most publicised promotion fare, the growth in frequent flyer programmes, code sharing and airline alliances could undermine the benefits of increased competition.

The Commission also recognised that a correctly-functioning market works on the basis of information: consumers can only make rational choices if they are well-informed.

Yet, in air travel – as in other 'liberalised', but heavily regulated industries – an informed consumer base has been slow to develop and airlines have been able to dodge consumer choice initiatives.

The UK Civil Aviation Authority produced its own assessment in 1998. It said that while there had been a substantial increase in competition, the growth in airline alliances and in airport congestion could undermine the gains.

Volume

Although liberalisation prompted significant changes within the industry, it has had mixed results as regards traffic.

Passenger numbers have increased across the period, but it is difficult to disentangle the effect of liberalisation from wider economic factors.

The number of air passengers flowing through UK airports increased from 32m in 1970 to 235m in 2006 – an average growth rate of just under 6% a year.

Volumes remain at that sort of level (231m in 2013 and 241m in 2014). Heathrow saw 73m passengers in 2013 and 2014, while the three main London airports (Heathrow, Gatwick and Stansted) saw 131m passengers in 2014, up from 125m in 2013. Much of their growth occurred after 1992.

However, recessions, terrorist attacks, war, diseases, illnesses and even a volcanic eruption have knocked holes in the industry.

Passenger numbers, although recovering, only reached their pre-2008 level in 2014, while annual air traffic movements (2.12m) are still 11% off their 2007 peak.[2]

Looking further ahead, while year-on-year growth in passenger traffic between the UK and Europe has been extremely volatile, liberalisation has been accompanied by a declining overall trend in year-on-year growth.

This is not to say the market has been shrinking, just that the rate of growth has been declining towards a year-on-year rate of 2% or lower, (see graph 2[3]).

In short, while liberalisation produced a short-term boost, its economic effects are now being lost in the system.

We believe the pursuit of further, probably marginal, gains in supply and demand has put other strategic objectives – like safety and the environment – at risk.

A benign view of our economic analysis might be that civil aviation, given its proximity to long-term GDP growth, is converging to a sustainable growth pattern.

This might be expected in a market

2   There will be an element of double counting on domestic flights because movements refer to all take-offs and landings and passengers are counted on arrival and departure. However, domestic flights make up a small proportion of the overall total (and have declined more quickly post-2008). The average number of passengers per traffic movement has continued to rise since at least 2003, being 97 in that year and 114 in 2014. UK airlines are continuing to fly more, on less. This increased load factor will contribute to reducing emissions levels. The data shows a similar picture when double counting domestic traffic is taken out.

3   http://www.aviationeconomics.com/ NewsItem.aspx?title=Low-cost-airlines:-Stimulation-effects-wear-off.

which is becoming mature: compare it to the 1950s and 1960s, when airline travel growth rates were above 10%.

The ten-year, moving average annual growth rate has been static since about 1983.[4]

Current growth levels are also proportionate with performance when it comes to annual improvements in fuel efficiency (and, thus, carbon emissions).

This analysis is important for the debates about sustainability and airport expansion. If measures are taken to control (or even reduce) demand, this could be tantamount to bolting the stable door well after the horse has bolted.

In terms of its annual growth rate, the time for a policy to restrict growth might be long gone.

Passenger experience

What has changed, however, is the mix: liberalisation encouraged the growth of so-called 'low cost', or 'no frills' carriers (LCCs), as opposed to 'full-service' ones.[5]

The LCC market grew rapidly as a result of low fares and new routes which started with the restructuring of Ryanair in 1991, quickly followed by easyJet in 1995. Early growth in LCCs, albeit from start-up, was around 40%.

There was an interruption in 2001/02 because of the terrorist attacks in the US, but the slowdown of growth in the overall market then kicked in as passenger numbers stagnated.

As the LCC market has matured, growth has been achieved by taking

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4   CAA (2008): Recent trends in growth of UK air passenger demand – http://bit.ly/caa_recent_trends. P14, figure 2-1.

5   Charter airlines are also 'low cost' carriers, while ' full-service' ones are frequently less than that as they struggle to compete.

GRAPH 3

UK residents' visits abroad, by purpose of visit, 1980-2014

- Total
- Holiday (thousands)
- Business (thousands)
- Visit Friends or Relatives (thousands)
- Miscellaneous (thousands)
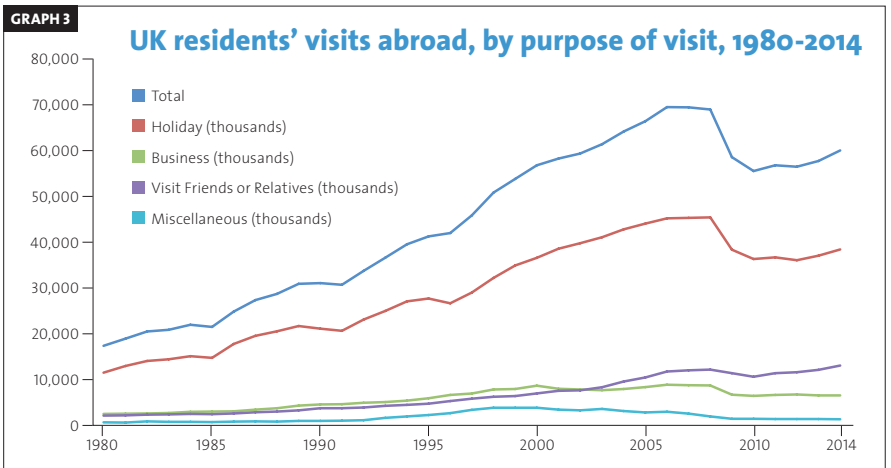
Source: Office for National Statistics

GRAPH 4

Total number of city pairs (routes), by type of carrier, 2005-2012

- Full-service
- Low-cost
- Regional
- Leisure

	2005	2006	2007	2008	2009	2010	2011	2012
Leisure	474	454	848	619	457	499	491	636
Regional	743	793	815	929	835	855	862	826
Low-cost	1,001	1,302	1,712	2,079	2,486	2,713	2,879	3,039
Full-service	3,525	3,409	3,561	3,486	3,446	3,589	3,469	3,391
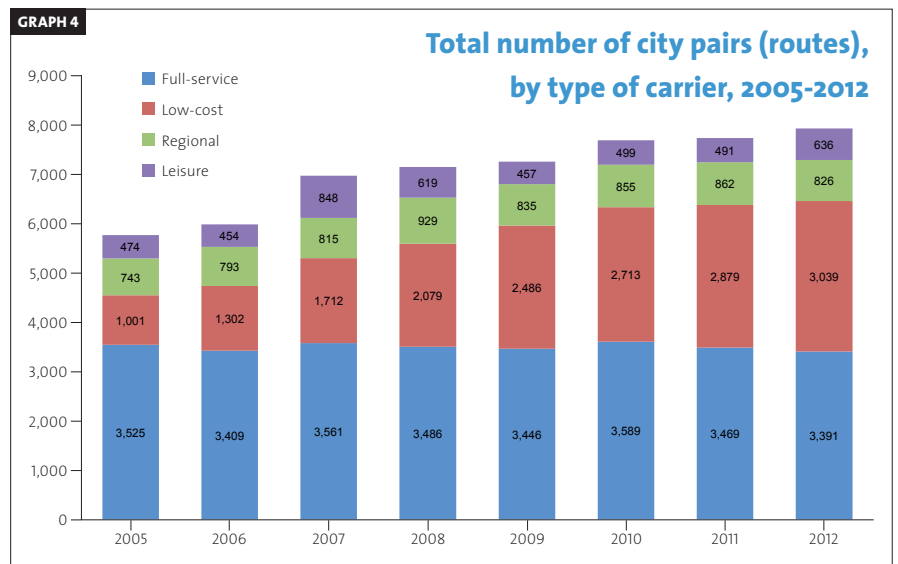
Source: OAG data[9]

market share from existing full-service operators.

Flag carriers' passenger numbers have steadily declined, with LCCs effectively accounting for any growth in passenger numbers.

In 2012, LCCs accounted for 32% of seats offered on intra-EU routes, compared to 20% in 2005. Ryanair and easyJet accounted for 64% of that LCC volume. But full-service carriers still account for more than half of all seats.

The number of routes between pairs of cities by carrier type (Graph 4) shows that the number of city pairs offered by full-service carriers has declined. Regional airlines have been largely static while the impact of the recession on leisure (mostly charter) operators is clear.

In contrast, in an overall market that has just about grown since 2005, LCCs have doubled their share to about 40%.

Within the EU (ie short-haul), LCCs have doubled their share of city pairs from 28% to 57% while full-service carriers have fallen from 46% to 28%.

On routes outside the EU – a growing market – the full-service carriers' bigger share of the market is also in decline (61%) as opposed to 83% in 2005; while LCCs has shot up to about 22%.

The LCCs' shift in focus to medium and long-haul routes reflects the probability that their share of the intra-Europe market will have reached saturation point by 2020.

In achieving this growth, LCCs have replaced the glamour of international air travel with a basic functionalism – air travel as commodity: transport from A to B.

The development of new markets and the use of a single cabin class by LCCs have been described as the 'democratisation' of air travel.

But this ignores the impact of LCCs on workers' rights and the long-term trends in the market ie the fall in prices set in long before LCCs came on the scene.

A 2005 report from the CAA on the first ten years of liberalisation suggested that much of the growth in passenger numbers would have happened anyway.

The LCCs have simply cannibalised other operators' traffic – particularly charter airlines – in a leisure market whose business model has been undermined by internet booking and independent travel.

The data on passengers by income suggests that people on below median incomes took about the same (or even a slightly lower) share of flights in 2005 compared to 1996.

The main increase in usage has been among people with incomes on and slightly above the median, who are flying more frequently.

The CAA data suggests that LCC operators (including charter airlines) have a much higher proportion of flyers from socio-economic categories C2, D and E.

On the basis that this is likely to be linked to price, we can conclude that LCC operators' low prices have improved lower income groups' access to air travel.

Implementing the single market appears to have resulted in a wider choice of air services and lower fares for passengers.

However, it has turned air travel into a commodity – every part of the service now has to have an economic value attached to it and every part of the service is now subject to scrutiny and, increasingly, competition.

Passengers now look at air travel in terms of price rather than service and they expect it to be cheap.

The airlines' desire for greater flexibility and lower costs has resulted in reduced staffing, outsourcing and off-shoring, increased working hours and less secure work.

While this has been most marked in airlines, cost cutting is also influencing the employment climate in other areas, for example ground handling and air navigation services.

The 'low cost' business model

Drawing on the US model pioneered by Southwest Airlines in the 1970s and 1980s, the LCCs focused on their fundamental purpose: transporting passengers from A to B.

'No frills' meant a stripped down service. Everything else – card

payments, printed tickets, hold baggage, food and drink were all extras; check-in became self-service and seat allocation a scrum. Luxury lounges were out and boarding via an air bridge became a bonus.

Many of the add-ons, like in-flight entertainment and a £3 scratch card, were treated as a source of revenue to supplement the advertised low air fares.

The sharp, even rapacious,[6] focus on price-sensitive passengers seeking deals in the leisure market more or less summarises the passenger offer.

The other side of this coin is the LCCs' drive to sweat their assets – both human and capital. LCCs want to increase the number of flights each aircraft (and each crew) can make each day by having shorter turn-around times on airport stands.

Minimising the time on stand adds to the pressures on engineering staff who must satisfy themselves of the airplane's airworthiness.

The practice of filing flight plans in advance, again to minimise time on stand, increases the pressures on pilots and, potentially, air traffic control staff.

The difference between full-service carriers and LCCs is that while both pursue profit, the former have until recently done so by maximising revenue, the latter by cutting costs.

LCCs have had a substantial impact on the airline market in the UK. A CAA report in 2006[7] noted that LCCs

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6   LCCs have been criticised for their lack of transparency on online booking and ticketing arrangements. In 2007, the House of Commons transport select committee said customers were being "duped" into choosing a carrier on the basis of inaccurate fare information on the internet.

7   CAA (2006) No-frills carriers: revolution or evolution? http://bit.ly/caa_no_frills_carriers.

had not benefited from a particular technological breakthrough – they use the same aircraft and face the same fuel costs as other airlines – and the industry had long been aware that high utilisation and simplified fleets would lower costs.

LCCs created a business model out of cutting costs and simplified operations, resulting in a different approach to fleet management, airport operations and sales techniques. The CAA concluded that the LCCs had been revolutionary in these areas. But in influencing traffic growth and changing the passenger mix, the impact was more evolutionary.

LCCs currently have a number of advantages when it comes to their cost structure:

- frequent flights on short-haul, profitable routes (these offer savings on maintenance and pilot costs because of a less diverse fleet and simpler rostering than operators with longer routes and more diverse fleets)
- greater capacity rates. LCCs across Europe operate on an average 165 seats per flight movement, compared to 126 for legacy operators (a 31% differential)
- point-to-point routes offer greater possibilities for flexible scheduling than uneconomic flights out of season
- use of secondary airports which are less congested and more likely to negotiate reduced airport charges (or even pay the airlines to land)
- fleet utilisation. In 2011, British Airways achieved an average flying time 9.2 hours per day for its Airbus A320s, compared to 6.5 hours in 2000. This was still much lower than easyJet's 11.2 hours
- standardised fleet: common aircraft with a single class of cabin are

generally new and thus more fuel efficient.

The traditional carriers' strengths – in networks, prime airport slots, service and brand recognition – make it difficult to replicate the low-cost model.

This is because the complexity of operating substantial, long-haul networks means there are fewer possibilities to maximise aircraft productivity.

LCCs can exploit point-to-point operations, ie they fly passengers from one, often secondary, airport to another and their responsibility to the passenger ends there.

Full-service carriers' hub-and-spoke operations ie routing passengers into and out of a central location, offer a more end-to-end service and require transit infrastructure and scheduling connecting flights.

Both respond to consumer needs and market conditions. But LCCs have been particularly effective at spotting trends and growing the market via new routes to hitherto unsupported destinations. They also recognised business travellers' need for low cost, short-haul, short visits.

From a trade union perspective, low-cost carriers tend to have an attitude towards employee relations and trade unions which ranges from the ambivalent to the downright hostile.

Furthermore, the pressures that the LCC cost-reduction model exerts on ground crew are substantial when it comes to productivity (working time for flight and cabin crew is heavily regulated by international convention, making the employers look elsewhere for savings).

The demands for greater productivity come with little sign that LCCs are prepared to pay for it. Aviation used to be a prestigious industry to work in, offering people high-quality

jobs. This is increasingly not the case under the pressures of the LCC model.

On the basis of their own histories as public corporations, full-service carriers tend to reflect a much higher degree of union organisation and influence over employees' terms, conditions and working practices, reflecting a joint approach to what we now call 'good work'.

Flags of convenience

Some airlines are currently looking at using the low-cost carriers' model as a business model – described by the International Transport Federation as 'flag of convenience'. This includes registering offshore in order to benefit from less restrictive regulation.

The motive is to drive costs down further. Cheap registration fees, low or no taxes and the freedom to employ cheap labour in unregulated labour markets are the motivating factors behind a decision to 'flag out'.

Some airlines have chosen to move their headquarters operations to other countries to avoid taxes or social legislation and/or to hire non-European crew.

This model emerged because of deregulation and faltering social dialogue at European level and there are disturbing signs of a developing 'market' in regulation.

Operators are beginning to run 'regulatory shopping trips', ie relocating their business, licences and air operator certification to countries with 'lighter touch' regulation.

Regulators who are responsible for the market as well as safety, increasingly think that they can only attract business by adopting a 'light touch'.

Norwegian Air International

In Europe, Norwegian Air International exemplifies the flag of convenience model. NAI operates flights within and outside the European Union. It uses European self-employed contractors as pilots. Cabin crew have individual contracts of employment and are supplied by a Singaporean agency based in Bangkok (where EU and Norwegian labour legislation cannot be implemented or enforced).

NAI is owned by Norwegian Air Shuttle (based just outside Oslo), but it set up its headquarters in Dublin in 2013 despite having a limited number of HQ staff. This was presumably for tax reasons and/or to exploit perceived weaknesses in Ireland's regulatory oversight.

That said, NAI does now offer flights out of Dublin, but these are a recent addition and certainly after it moved its HQ to the Irish capital.

The Dublin headquarters is more or less a 'PO box' operation – allowing NAI to escape the stricter employment standards and labour laws in its home country. NAI's aircraft are also registered in Ireland, despite the fact that the fleet rarely lands there.[8]

If it is allowed to proceed, the NAI flag of convenience model will open the door to airlines shopping around the globe for the lowest tax, regulatory and labour standards.

NAI is not alone – Ryanair, for example, also contracts pilots via a UK-based agency employing those pilots in small companies set up by Irish accountants.

The pilots supply their services on an exclusive basis. And Ryanair

clearly provides them with operational instructions. Yet, legally, they are not Ryanair employees.

Are we overly pessimistic about the threat posed by flags of convenience? The ITF – drawing on its experience of the shipping industry – thinks not. The European maritime sector has declined because the permissive attitude towards flags of convenience has devastated the industry and employment.

Cork crash, February 2011

The Irish Air Accident Investigation Unit's report into a crash at Cork in February 2011, in which six people died, found that oversight is impeded and aircraft passengers' safety compromised when operating licences are held in third countries.

In the Cork incident, the Air Operator Certificate was held in Spain, where the aircraft was owned.

The formal investigation found that:
"The IAA and UK CAA... relied on the oversight of Spain to ensure compliance in regulatory matters... The evidence shows that such oversight was of limited scope and low effectiveness."

The investigation found that flight crews were reluctant to record defects when proper maintenance support was not in place for the aircraft's proper certified return to service.

In short – there are significant pressures to allow potentially faulty planes to fly when turn-round schedules are very tight and maintenance is not possible.

Labour standards

Flags of convenience also threaten labour standards. The experience of the maritime industry, which has been based on FoCs for many years, is clear. Not only does this approach fall outside any definition of 'good work', it undermines employment standards in

the sector.

Suspect employment practices are on the increase. Ryanair is well-known for its anti-union stance, manifested in its use of 'self-employed' pilots and cabin crew who have to pay for their training and their uniforms. But Ryanair is not the only company adopting exploitative practices.

A genuine link between the aircraft owner and the flag under which it operates is necessary. This would minimise the threats to public safety – and the safety of those employed to get them to their destinations.

Businesses should not be able to pick and choose regulatory regimes in order to avoid labour-related or other social legislation in their country of origin.

Flags of convenience should not be a model for European aviation. We support the European Transport Federation's call for governments to insist on the highest safety and security standards and to reject the behaviour which has led to Norwegian Air International's FoC scheme.

We endorse the ETF's twelve proposals to prevent social dumping and flags of convenience in the EU, and the Sectoral Social Dialogue Committee for Civil Aviation's statement on 5 June 2014.[9]

Flags of convenience must not be the beneficiaries of UK airport expansion.

Air traffic management

The Airports Commission's recommendation to build a third runway at Heathrow will increase air traffic movements by up to 260,000 a year.

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8   Information drawn from bit.ly/etf _ and bit. ly/oppose_nia

9   Respectively bit.ly/etf _12_proposals and bit.ly/declaration_oppose_flags_of _ convenience.

This would nearly double the total number of movements, from the current 280,000 to between 500,000 and 600,000 per year.

The UK's air traffic management system must be properly prepared to handle an increased number of flights in a regime where safety comes first. This will entail significant, immediate investment in air traffic control systems and procedures so that the system itself, and the air traffic controllers who run it, are in a position to handle this increased volume.

Prospect's air traffic control officers' branch (ATCOs) told the Airports Commission that:

> "Doubling the capacity in the South east region will rely on innovative new tools and techniques for our members to utilise to continue to deliver the safe and expeditious service that the airspace users enjoy today."

The controllers said expansion had to be appropriately "joined up" with the wider pressures resulting from the Single European Sky initiative.

In particular, European Performance Scheme targets on NATS must be applied in a way which allows NATS to provide the resources to implement the increase in airspace capacity.

Horizon scan

The future looks somewhat uncertain as many of the full-service operators have adjusted their business models in line with those of low-cost carriers. This means reducing costs by cutting the number of employees and their terms and conditions of employment.

Whatever the merits and demerits of the LCC model, we doubt that cutting costs can constitute a meaningful transition strategy for full-service airlines. Apart from experiments with distinct, separately-branded LCC

subsidiary operations, their cost base will always be higher.

Instead of continually seeking to cut costs, we believe operators need to develop a differentiated, quality customer service which sets them apart in a market in which passenger decisions look to be split between a cost/service conundrum.

At the same time, the LCCs are increasing their longer haul operations, which are important in the search to preserve high growth rates. This could jeopardise some of the advantages they have enjoyed in terms of aircraft productivity.

Other operators have tried to differentiate themselves by offering more service options, including 'business premia' style ticketing and airport fast-tracking.

Thus, current trends seem to point to a convergence of the LCC and full-service models – albeit at lower prices, a lower cost structure and a level of service that is sometimes questionable.

The second aspect is the number of airlines in operation and fragmentation at the supply level.

In 2011, 241 airlines were registered and offering services within Europe; in 2015, that will have fallen to 168 (a decline of 30%).

In contrast, North America has 84 airlines (a decline of 12%) while China operates 29. The UK alone has 19 scheduled carriers.

Whether a truly single market can sustain so many operators is questionable. But the future is likely to see such levels of turnover continuing at least at a similar pace, as airlines are squeezed out of business, merge or are taken over by global operators, resulting in a greater concentration of ownership.

We have already seen moves in this direction in Europe. The Austrian and Brussels airlines were incorporated into

the Lufthansa group; British Airways and Iberia merged to form IAG and Air France and KLM merged in 2004.

LCCs have already been subject to substantial churn because of liquidations and takeovers arising from the sheer number in the market at any one time.

In the first ten years, the casualty rate was 37%.[10]

Further, similar moves are likely although, as in other sectors of the European economy, the level of state participation and lingering national pride may act as inhibitors.

Each scenario presents a major challenge to preserving jobs and terms and conditions of employment. Consumers may also find it difficult to fly with operators other than Ryanair or easyJet.

We continue to be surprised by the level of short-term waste produced by relying on market-based solutions to deliver what is ultimately a public service.

Thirdly, we are looking at a world of ever-tightening pressure to push costs down. This affects all our members in aviation, including licensed engineers, air traffic controllers and those working in airlines and airports.

We believe that safety is potentially being compromised. Regulators engaged in cutting costs are pursuing a high-risk strategy on behalf of one part of the market.

Prospect supports economic development and opening up markets as long as these activities are based on social democracy, fairness at work and safety.

Liberalisation needs standards, including:

- economic growth must be pursued responsibly and sustainably by

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10   CAA (2006) No-frills carriers: revolution or evolution? bit.ly/caa_no_frills_carriers.

investing in skills and capital to improve productivity

- universal service – everyone should have access to important services, not just those who live near where they can be offered profitably

- sound governance – social dialogue must underpin decisions about industrial change

- good work, based on employee development, employee voice, fair reward and workers' social and labour rights

- regulatory systems must ensure good governance, serve the public interest and recognise that safety – in aviation and other areas of transport – is the public's priority.

Chapter 2 – The true cost of safe air travel

- **The largest element of an airline's cost base is fuel (around 25%).**
- **Safety-related costs are about half the cost of fuel.**
- **Passengers face the law of diminishing returns: marginal reductions in safety costs will yield negligible savings in ticket prices, but potentially significant increases in risk.**

Balancing cost cutting and safety is the major challenge facing the aviation industry.

We used data published by the Association of European Airlines (a lobby organisation of 24 European airlines) to calculate an airline's costs in transporting people from one destination to another.[11]

We looked at the various cost components and compared them with average seat revenues.

Fuel and oil made up at least one-quarter of the total, with everything else, other than taxation, in single figures. The AEA's data is particularly interesting because it separates out air navigation costs – the charges that airlines pay for air traffic control, both at the terminal and en route. These represent just 6% of total costs (5.81%) – and falling.

The International Air Transport Association estimates the average price of a return air ticket in 2015 at $458 –

just short of £300 (at current exchange rates). Air navigation charges amount to £17.31.

This is significant for those who want to cut air traffic management costs.

Reference Period 2 (RP2) establishes targets and measures for NATS and other EU national air navigation services providers under the Single European Sky performance scheme.

Shaving 5.1% a year from air navigation charges, as NATS has to do under RP2, would mean a reduction of 0.3 percentage points, taking the air navigation charges to 5.51% of the ticket price.

This would imply a saving of just 89p on the price of an average return ticket, in this first year of RP2.

The IATA data suggests that the average return ticket price is likely to be 5.1% lower in 2015 than it was in 2014 (largely because of the fall in fuel prices) – a drop of £15.19.

Against such a figure – albeit a highly volatile one – the proposed reduction in air navigation charges is a drop in the ocean.

NATS' own survey puts cost eighth out of 10 priorities for airlines and

airports: well behind safety (first), flight and fuel efficiency and other operational priorities such as delays (http://bit.ly/nats_2015)

Engineering maintenance

The other regulated safety component is the certificates which Prospect's licensed engineers issue on the airworthiness of aircraft. This is not separated out in the IATA data but is likely to form a small subset of the 'maintenance and overhaul' category.

Even if we include maintenance and overhaul, the general cost of delivering aircraft safely into and through the air (engineering and maintenance, plus air traffic control) represents something like £46.14 of the average ticket price.

If the 5.1% being shaved off air navigation charges this year under RP2 was applied to maintenance and overhaul, £2.35 would be knocked off the average ticket price in 2015.

Given the low overall 'per seat' cost of safety, Prospect believes that regulators are engaged in **a high-risk pursuit of gains that are, at best, marginal**.

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11   *The source for the breakdown of airlines' operating costs is: http://bit.ly/atc_europe_performance (p17, section 2.5). On taxation and profits, Prospect looked at the accounts of 25 major airlines operating in Europe. The figures represented the average level of taxation and pre-tax profit, both expressed as a percentage of turnover (in the former case, among companies not claiming a tax credit in the most recent financial year).*

Source for forecast ticket revenues for 2015 is the International Air Transport Association: bit.ly/iata_economic_performance

NATS' performance

EUROCONTROL's 2013 benchmarking report[12] shows that NATS already compares favourably with its European counterparts, both in general and with the four other leading service providers.

- NATS is within the interquartile range for all European operators on cost effectiveness (and better than three of the other four leading providers)
- ATCO-hour productivity (for gate-to-gate services) is in the top quartile (and better than three of the other four leading providers)
- per-hour ATCO employment costs are within the inter-quartile range (and cheaper than two of the other leading providers).

The data also shows that en route unit costs have been falling in the long-term and that delays (which are costly in terms of time, fuel burn and emissions) have been running at an all-time low for the past three years.

Prospect believes that attempts to drive down costs at NATS are misplaced. Further cost cutting is unecessary and unwarranted and will expose UK travellers to risks.

12   bit.ly/eurocontrol_atm_cost_effectiveness. Published May 2015.

BOARDING PASS

Where do airline revenues go?

FLIGHT: **A320**   DATE: **03/05/15**   CLASS: **ECONOMY**   SEAT: **1**

SEAT

1

CLASS: **ECONOMY**
FLIGHT: **A320**
DATE: **03/05/15**

Expenditure

FLIGHT OPERATING COSTS
- ★ Fuel and oil
- ◻ Flight deck crew — 23%
- △ Aircraft rentals — 8%
- ◻ Flight equipment depreciation — 7%

4%

GROUND OPERATING COSTS
- ◻ Station and ground
- ◆ Airport charges — 14%

4%

SAFETY COSTS
- ★ Maintenance and overhaul
- ◻ Air navigation charges — 10%

6%

SYSTEM OPERATING COSTS
- ◻ Reservation, ticketing, sales and promotion
- ◆ Cabin attendants — 8%
- ★ General and administrative — 5%
- △ Passenger service — 4%

4%

OTHER
- ◻ Post-tax Profits
- ★ Taxation — 2%

1%

prospect

Chapter 3 – Increased airport capacity

Increased airport capacity in London and the South East is required. This is not the result of ever-increasing demand, but because:

- **the case for preserving and developing Heathrow as a 'hub' is compelling; and**
- **Heathrow and Gatwick are at the limits of their capacity.**

Other airports must be better integrated in the Heathrow hub, giving easier access for passengers and enabling regional capacity to be better utilised.

The environmental conditions specified by the Airports Commission must be met.

The government must make a decision and get on with it.

Airport capacity, especially in the South East of England, has preoccupied decision-makers for decades. No new full-length runway has been built there since the end of the Second World War, despite the explosion in population and flights.

The issue has been live ever since. Constraining airport expansion is one of the oldest, if rather blunt, tools for managing demand.

With the relatively recent break-up of the British Airports Authority (on competition grounds), the airports surrounding London have been competing with each other rather than managing their services strategically.

Falling behind

In parallel, Heathrow has become increasingly less attractive to airlines as a European hub, losing out to Frankfurt,

Where should aviation capacity be located?
* led by Bristol and Edinburgh

GRAPH 5

Birmingham	Gatwick	Heathrow	Luton	Manchester	Southampton	Stansted	Other*
264	560	626	100	272	118	247	232
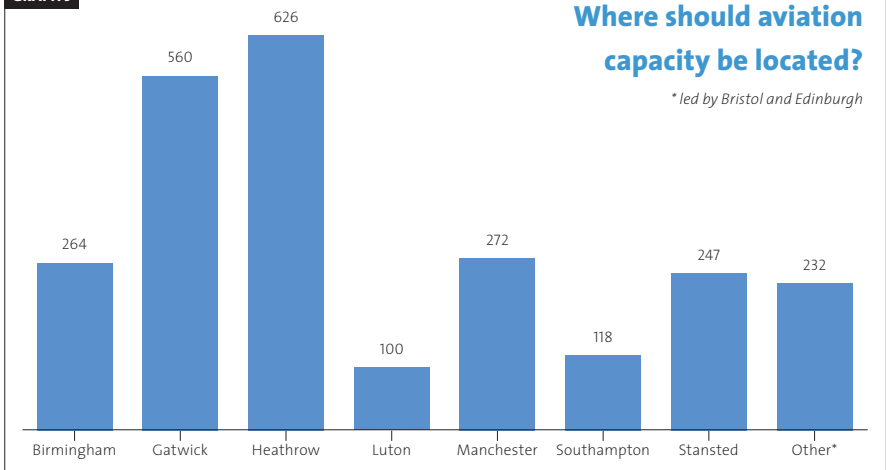
Source: Prospect members' survey 2015

Paris, Amsterdam, Dubai and Istanbul.[13] This has stoked concerns of a loss of global connectivity and access to China and other emerging economies for British exporters.

In the last twenty years, the UK has been relegated to fourth or fifth place for new routes to China, Brazil and Russia from within the EU, potentially damaging trade and economic growth.

Given that Heathrow operates at 98% of capacity, and Gatwick has 88% of runway slots already taken up and is full at peak times, there is little slack at either airport to allow for emergencies.

Any disruption to services rapidly escalates, creating lengthy delays. So there is clearly no scope for increasing flights or passenger numbers at either airport.

There are powerful arguments that

UK competitiveness will be threatened if this situation continues much longer, both for aviation and the wider economy.

Standing still will see the UK losing out and falling down the economic ladder, in Europe and globally.

Capacity is arguably the most significant policy issue confronting the aviation sector and it continues to be politically-charged.

The long-standing concerns of local residents and those under flight paths have been heightened in recent decades by greater awareness of climate change and rising levels of CO_2 emissions.

Consequently, in September 2012 the government established the Airports Commission to recommend how to meet any need for additional airport capacity in the long term. The government's aim is to maintain the UK's position as Europe's most important aviation hub and support its future economic health and prosperity.

The final report, published on 1

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13   *Dubai will soon have more capacity than London's five airports combined. The Turkish government announced the new airport for Istanbul in 2013 and it is due to open in 2018. Once fully complete, it will have six runways and cater for 150m passengers a year – more than twice Heathrow's capacity.*

July 2015[14], said a new, third runway at Heathrow Airport was the Commission's 'clear and unanimous' choice to deliver increased capacity by 2030. But it did say that the other two, shortlisted options also presented credible alternatives.

The report also outlined environmental and social measures to ameliorate the impact – pressing Heathrow to become "a better neighbour" and stressing that "business as usual" could no longer prevail.

The TUC said political support for expansion at Heathrow would not be forthcoming without such measures.

Prospect's position

Prospect and the TUC generally support increased airport capacity in the South East, although we did not express a view on the options considered by the Commission.

This position was adopted by Prospect's ATCOs' branch. Their submission highlighted new approaches to airspace management and the new technologies essential for delivering new capacity, wherever it is located.

If expansion should follow demand (or if demand increases and travel patterns change once the infrastructure is put in place as in road and rail planning), there is an argument for expanding both Heathrow and Gatwick.

However, once the source of the demand is mapped, and it is recognised that some of it comes from the Midlands and the North, the case for Gatwick looks less compelling.

There is a valid argument that under-capacity at other airports in London and

the South East (Stansted, London City or Luton, for example) means that the overall capacity question is not clear-cut.

Ultimately the argument hinged on the hub concept and the relationship between long-haul and short-haul services.

It is questionable whether any other airport could replace Heathrow as a hub in the medium-term[15] given its gateway status, strong local transport links, dense route network and frequent services, particularly for transfer passengers.

In other words, it is not just a question of overall capacity, but where this capacity is located, ie in a place where travellers need and want to be.

Regional hubs

There are clear regional development arguments against additional capacity in the South East and our survey found strong support for increased capacity at other airports.

The Airports Commission picked this up by recommending that the government introduces public service obligations and other measures to support a wider network of domestic routes and enhance Heathrow's domestic connectivity.

This would help develop the 'hub' model, by providing 'spokes' for those parts of the UK where many point-to-

point routes are not an option.

Our survey found strong support for the hub model and overwhelming support (83%) for developing existing regional airports' transport links.

Given that a new runway in the South East will take at least 15 years to come into service, the case for this is compelling. Fifteen years is a conservative estimate – in the meantime, demand has to be met.

The Airports Commission highlighted the opportunities for other UK airports given the current constraints in the South East. This could include Stansted, whose runway is capable of accommodating an additional 20-25m passengers a year.

The government missed the opportunity to build a fast connection between Heathrow and Stansted when it was planning Crossrail.

Forcing BAA (now Heathrow Airport Holdings) to dispose of Stansted removed it from Heathrow's planning envelope.

Regional airport development would free capacity in the South East and reduce the need for passengers to travel to London for flights. (Six million passengers travel from the West of England every year).

Improved connectivity at regional airports would resolve some of the demand, but not the entire capacity problem.

No more dithering

Now that the Commission has reported, the government must avoid the temptation to delay any further and decide how to address the capacity shortfall.

The government should implement the Commission's recommendations as comprehensively and as swiftly as possible.

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14   https://www.gov.uk/government/publications/airports-commission-final-report.

15   *In the long-term, these airports will also fill up. On the Airports Commission's assumptions of passenger growth (more conservative than those adopted by the DfT), Stansted will be full by 2041, and Gatwick and London City by 2020 and 2024, respectively (ie before any third runway at Heathrow becomes operational). Expansion at City, even in the short-term, is currently blocked because it has been unable to gain planning permission for additional aircraft stands even though it has capacity and permission for an increase in movements.*

Modifying the recommendations would trigger a further round of consultation which would delay this critical national infrastructure project by another five to 10 years.

This view shared by many institutions including: the Commission itself, professional associations, national and local politicians, other UK airports, the other shortlisted Heathrow bid, assorted business groups, the TUC and prominent aviation unions like BALPA, GMB and Unite.

This is not to dismiss the entirely legitimate concerns of the transport, environment, rural preservation and health campaign groups who oppose the Commission's recommendations. But the Commission was established to balance these interests and analyse the evidence, and the debate should now be seen as resolved.

The priority now must be to implement the recommendations and invest in the infrastructure. A planning blight of the sort seen in nuclear new build must not be allowed to happen in aviation.

Chapter 4 – Aviation and the environment

Aviation's contribution to carbon emissions is not as significant as generally thought. Nevertheless, aviation has to make a contribution if the UK is to meet its international commitments to carbon reduction.

Tackling local environmental impacts – noise and air quality – are important for public acceptance of the industry.

Climate change

A new international deal on carbon emissions is due to be signed at the United Nations climate change conference in Paris in December 2015 – when the government's decision on Heathrow is due.

Responsibility for reducing aviation emissions is likely to fall to the International Civil Aviation Authority, a UN agency.

A global carbon market agreement signed by the 191 ICAO member countries in 2013 envisages using carbon offsets, a fair price for carbon and a cap-and-trade scheme.

But progress has been slow because of political difficulties and the problem of attributing responsibility for aviation emissions to particular countries.

EU emissions trading scheme

Within the EU, aviation emissions for all flights that take off and land within the European Economic Area have been included in the EU's Emissions Trading Scheme (ETS) since 2012. The cap was set at 95% of the average emissions in 2004-2006.

However, rather than reduce their own emissions, most airlines will probably invest in other options like credits in emission-saving projects created through the Kyoto Protocol or

GRAPH 6

What are the biggest problems facing the UK aviation industry?

Categories (top to bottom): Low cost carriers creating demand for cut-price travel; Environmental impact of air travel; Security in an uncertain world; Government does not value the industry's contribution to the UK economy; Air Passenger Duty; Aircraft noise; Policy-makers' lack of appreciation of the importance of aviation infrastructure; Policy-makers' indecision or the time it takes to approve infrastructure projects; Oil price volatility; A fragmented industry across Europe; Delays to flights; The impact of regulatory policy; Lack of investment; Other

Legend: First choice; Second choice; Third choice

Source: Prospect members' survey 2015

by purchasing EU ETS credits.

This, alongside the rather low carbon price, has resulted in some cynicism about the scheme. It has also been dogged by trade controversies and a (failed) legal challenge.

Flights from outside the EU were excluded from the ETS in the hope that this would help to reach an agreement on a global market mechanism via the Paris discussions. It is clear that a global issue requires a global solution.

The concerns over aviation's role in climate change are considerable and shared by many Prospect members. Our survey found that a fairly sizeable minority have reduced their use of

aviation – primarily because of their concern for the environment. Those who rated their environmental concern as 'high' greatly outnumbered those suggesting it is not important.

Committee on climate change

The day before the Airports Commission published its final report, the government's Committee on Climate Change[16] (CCC) highlighted the need for action on aviation emissions to ensure

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16   http://bit.ly/ccc_progress_report_2015.

that carbon dioxide (CO2) emissions from aviation are no higher in 2050 than they were in 2005 (37.5 million tonnes).

The government set this unofficial target in 2009, when it favoured a third runway at Heathrow. The CCC said aviation demand must be limited to no more than 60% above the 2005 level.

But current forecasts for 2050 for flights departing from the UK suggest the emissions figure (47 million tonnes) will be exceeded, even before new airport capacity adds further to passenger numbers and emissions.

The committee called on the government to push for strong international and EU policies, consistent with the 2°C climate objective, and to implement an 'effective policy framework' by 2016 to achieve aviation emissions targets.

Air quality

The environmental debate is not just about CO2 emissions and the general state of the planet – there are huge concerns over air quality.

Aircraft engines emit pollutants that affect air quality, particularly near an airport, including nitrogen oxides (NOx), nitrogen dioxide (NO2) and particulate matter. The impact on health can be wide-ranging, but is particularly acute among children and those with respiratory illnesses.

NO2 levels at Heathrow regularly breach statutory limits and the UK is missing targets to reduce NO2.

Even without a third runway, the area around Heathrow will have the second highest levels of air pollution in the UK (and the worst NO2 blackspot in Greater London) by 2030. A third runway will clearly push it into first place and will require substantial mitigation.

The Airports Commission acknowledged that a third runway will be "significantly adverse" when it comes to air quality.

The final report says an expanded Heathrow "must be contingent on acceptable performance on air quality" with a legally-binding planning constraint which only releases the new capacity when it is clear that air quality will not compromise UK compliance with EU limits.

However, the Commission's assumption that air quality is a "manageable part of a wider problem, the underlying causes of which will need to be addressed by the Government", is contentious. The Supreme Court has told the government to submit an action plan to the European Commission by the end of 2015 detailing how it will meet NO2 targets.

Noise

Technological and operational improvements mean aviation-related noise has been falling for several decades – albeit the trend is flattening out.

The Airports Commission found that more people are affected by noise around Heathrow than at any other airport in Europe. Noise pollution is not just an inconvenience, it is a health risk too.

Research published in the *British Medical Journal* in 2013 found that cardiovascular disease increased in areas of the US affected by aircraft noise, raising concerns about a higher risk of strokes and coronary heart disease (www.bmj.com/content/347/bmj.f5432).

Studies also show that noise is linked to significantly-reduced reading comprehension and memory recall in West London school children (www.caa.co.uk/docs/33/ERCD200908.pdf).

The Airports Commission tried to address the noise problem by proposing to end scheduled night flights and through compensation to better insulate homes.

Its preferred solution also shifts flight paths to less densely-populated areas (subjecting others to noise for the first time).

It also recommended a legally-enforceable requirement for Heathrow to stay within a noise envelope.

Quieter planes and sophisticated air traffic management will continue be part of the solution.

Improved technology is available, but its use needs to be incentivised – Heathrow already offers lower charges for airlines flying less noisy planes. This needs to be encouraged for all airports and tighter noise standards should be introduced progressively.

Aviation research and development also has a role – both directly and for flight operational efficiency.

Chapter 5 – Environmental solutions

Although most measures will have a role to play, market interventions are unlikely to succeed – be they demand management or carbon trading and offset schemes.

Technical fixes to enhance aircraft efficiency and airspace design and management are already making a difference and are likely to be quicker and more effective.

Market intervention should focus on supporting and incentivising technical development rather than changing consumer behaviour.

The impact of airport expansion on health and pollution, both environmental and noise-based, must be a key consideration in the government's decision where to locate new capacity. But the industry cannot be sustainable unless it resolves these issues more generally.

The government's Committee on Climate Change was unclear on what its proposed policy framework for 2016 might mean for aviation, beyond references to fuel efficiency, the use of biofuels and moderating the growth in demand.

In 2009, the committee said the industry could reduce emissions to the 2005 level by 2050 by:

- limiting demand growth to 60% by 2050
- increasing the carbon price
- constraining capacity
- shifting from air to rail
- increasing the use of video-conferencing
- improving fuel efficiency by 0.8% a year, and
- using more biofuels.[17]

GRAPH 7

How should the the aviation industry tackle environmental concerns?

Categories (top to bottom):
- People should fly less
- Better investment in communications technology to reduce business travel
- Use technology and airspace to optimise flight routes
- More investment in new technology and new planes
- Better incentives to invest in R&D eg aircraft design, engine noise, fuel efficiency etc.
- Regulators and policy-makers need to set better environmental standards
- Other

Legend:
- First choice
- Second choice
- Third choice

Source: Prospect members' survey 2015

Its chair, Lord Deben, wrote to the Airports Commission reiterating this target and pointing to the role that managing demand might play, both directly (by limiting demand) and indirectly (a carbon price mechanism).

More fuel-efficient aircraft, technological advances related to biofuels and more efficient flight operations will help to some degree.

Although driven by pressure to cut costs, innovations in air traffic management and aircraft and engine design have increased fuel efficiency and thus reduced emissions in recent years.

Advanced communications, navigation and flight monitoring techniques are reducing the amount of time that planes spend in the air.

NATS has identified opportunities to deliver fuel and cost savings and reduce emissions through the 'perfect flight'.

These include:

- continuous rather than stepped climbs and descents
- direct route planning
- optimising flight levels
- speed control and queue management.[18]

Recent initiatives aim to change the minimum gap between flights on approach to a particular number of metres, rather than a number of seconds, in order to minimise aircraft being held in fuel-burning holding patterns.

Because aircraft noise is associated with particular flight manoeuvres, minimising 'stacking' will also help to reduce noise.

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17   bit.ly/ccc_aviation_options

18   bit.ly/nats_10_steps.

Research and development

Graph 7 summaries Prospect members' views on how to address environmental concerns, with greater investment in aviation research and development being the most popular option.

R&D expenditure already attracts relief from corporation tax, but the government could be more innovative with incentives, particularly in directing R&D effort towards environmental issues.

The government's 2013 *Aviation Policy Framework* set out several initiatives and the industry is already moving in this direction.[19]

Sustainable Aviation – an industry initiative involving airlines, airports, engine and airframe manufacturers and air traffic navigation service providers – drew up seven goals to improve environmental performance.[20]

Given the scale of the problem, this work needs to be stepped up, given a higher profile and more government support.

The timescale for reducing aviation emissions (to their 2005 level by 2050), means it is perfectly possible that a concerted programme of technical fixes could realise results, if put in place quickly. This would represent a major contribution to the industry's sustainability.

These measures could and should improve the passenger experience, help achieve environmental targets and enhance safety. They also balance what are often seen as competing objectives.

19   bit.ly/aviation_policy_framework, p50, para 2.45ff.

20   Fourth Progress Report, covering 2011-2013: bit.ly/sust_aviation_progress_report.

Performance-Based Navigation

Performance-Based Navigation (PBN) is a major shift from conventional ground-based navigation aids and procedures to satellite-based ones. These are more accurate and allow for:

- shorter, more direct routes between two given points
- increased accuracy of aircraft and
- more efficient take-offs and landings.

This reduces fuel burn, airport and airspace congestion and aircraft emissions.

PBN enables more efficient procedures to be introduced without compromising safety.

By minimising the requirements for aircraft separation (in both time and distance), PBN delivers a far more predictable 4D flight profile and thus an overall increase in airspace capacity and a reduction in aircraft emissions.

PBN is so accurate that aircraft will consistently fly within only a few feet of the published route every time.

This means that the noise, emissions and visual pollution from the ground is constant and sustained over a designated area.

The main policy question raised by PBN technology is whether the government wants routes to be concentrated or dispersed.

Under a dispersal policy, it is possible to create several arrival and departure procedures servicing the same route, as well as creating 'off-set' routes, so that the environmental impact is more thinly spread, but across a wider geographical area.

But this technology is not being exploited to its full potential in the UK. Airlines are putting pressure on air navigation service providers to create new procedures to exploit the PBN technology already installed on most aircraft.

Airlines saved almost £100m in fuel costs, nearly 200,000 tonnes of fuel and 600,000 tonnes of CO_2 in 2014/15 as a consequence of NATS' limited deployment of PBN.

Prospect believes the UK Civil Aviation Authority needs to amend current air traffic control separation standards to support the implementation of new PBN-based procedures.

Aircraft and aero engine design

Aircraft and aero engine design has played a big role in recent years as the industry has sought to reduce fuel costs and respond to environmental challenges. These include:

- adding 'winglets' to wingtips
- more efficient (and less noisy) engines
- developing and using advanced lightweight materials, and
- improved aerodynamics.

This is encouraging and has contributed to reducing aviation emissions, which, according to the Committee on Climate Change, are on a downwards trend from their peak in 2006.

The price of fuel has been the major driver, suggesting that falling oil prices may slow the momentum. Nevertheless, it is vital for the sustainability of the industry that it continues to deliver improvements.

Technological development must be incentivised. Government, government advisory committees and lobbying organisations must ensure that improvement continues.

ICAO's 'aspirational' target for how fuel efficiency can contribute to the

UN's climate change target (an annual improvement of 2%) is more than twice the assumption made by the Committee on Climate Change (0.8%).

However, the UK has recognised that it can improve its target under certain conditions. Technologists, engineers and aircraft and airspace designers must be fully engaged in determining how to limit emissions.

The growth of biofuels raises environmental and international development concerns, including the potential loss of CO2-absorbing forests and whether using land to 'grow' energy rather than food is sustainable.

The newest generations of biofuels may cause fewer concerns and such crops may well be suitable for brownfield sites. But much of the potential remains speculative, reinforcing the need for full consultation to identify the possibilities.

Managing demand

Technical fixes alone will not be enough. Managing demand by encouraging individual changes in behaviour will have to play a role in reducing aviation emissions.

A wide range of taxation and environmental groups advocate taxing individuals who take more than one flight a year.

The intention is to apply the 'polluter pays' principle to restrict demand and raise finance for environmental and health initiatives.

Some groups have also suggested using a frequent flyer levy to improve domestic public transport.

The Aviation Environment Federation, formed in 1975 to promote a sustainable future for the sector, pointed out that if increased capacity in the South East goes ahead, the only way to tackle CO2 emissions would be to restrict flights from regional airports and/or manage demand by imposing large increases in the cost of flying. But it does not believe that either approach would be deliverable.

Other measures, such as including the sector in a global carbon trading scheme, would present problems for other industries.

Greenpeace UK has also pointed to "the obvious fact that a new runway will almost certainly derail our legally-binding climate targets".

But much of this would depend on how much traffic Heathrow takes from other airports. Opponents of Heathrow expansion assert that this is likely.

Low-cost carriers in the UK have made greater use of airports away from London. This may have reduced the time spent travelling to London and the associated emissions.

Many (including the Committee on Climate Change) say that if managing demand limits usage, it could change the dynamics of airport capacity investment.

But the Airports Commission does not believe this undermines the case for greater capacity.

This may be a thorny issue for Prospect members working in aviation. But we have to assess the costs and benefits of specific measures.

Chief among these would be rail-air substitution and increasing ticket prices to influence demand – perhaps using carbon-offset levies.

International travel accounts for 95% of total aviation emissions and all the growth until it peaked in 2006. Domestic flight emissions are also in decline and are now no higher than they were in 1990.[21]

Placing a levy on travellers who are largely international to fund improvements to the domestic transport infrastructure is questionable. So too is whether a frequent flyer levy would provide sufficient funds to make a difference.

Frequent flyer levies may have some effect at the margins, but to be acceptable, passengers would need clarity on:

- what constitutes a 'frequent flyer'
- when the slate is wiped clean (so that people who fly a lot in one year but not in the next two are not tagged a 'frequent flyer' for life)
- the connection between 'frequent flying' and the practical travel choices that they face. Some people may have little or no choice on how they travel.

Profit margins in the aviation industry are very narrow, despite the steady increase in flight occupancy over the years.

If a frequent flyer levy succeeds in reducing demand, some flights may be lost and those who are not frequent flyers will be affected.

We do need to combat rising aviation emissions, but we are **not convinced that managing demand can play as big a role as its proponents think**.

A public policy that discourages individuals from flying would contradict evidence that, as individuals, we are not flying substantially more than we were.

Year-on-year growth seems to be settling at sustainable levels anyway.

Would higher ticket prices reduce demand? It has been suggested that an increase of 1.4% per annum would be a significant disincentive. This is fine in theory, but flies in the face of the prevailing orthodoxy ie that competition will reduce prices.

In the context of the current no-frills,

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21   See *Meeting Carbon Budgets*, p129, figure 4.8: bit.ly/ccc_progress_2015.

low-cost model, ticket price inflation of 1.4% will only influence demand in the longer-term. 1.4% is, for example, lower than long-term inflation and earnings growth.

Taking the train

In Prospect's survey, 73% of respondents agreed (34% agreed 'strongly') that UK transport policy should encourage those undertaking journeys within the UK to use rail transport instead of air.

Whatever the merits of encouraging substitution – and regardless of the need for a much better, more integrated transport system for the policy to work – the low level of emissions produced by domestic aviation compared to total emissions means that **rail-air substitution within the UK will not make a significant contribution to reducing emissions overall**.

The Channel Tunnel is also providing opportunities for journeys to closer parts of Europe.

However, the Committee on Climate Change's 2009 report said that journeys of up to 1,000km contributed only 13% of the UK's aviation emissions in 2005.

While reducing emissions is welcome and will contribute to meeting targets, rail substitution (even into Europe) will make only a small dent in aviation's carbon footprint.

Emissions trading

Short-haul flights, ie those within Europe, will be covered by the EU's Emissions Trading Scheme.

Putting to one side the controversial point that the scheme 'excuses' airlines from any responsibility to reduce emissions, the scheme does provide opportunities to do so.

Insisting that aviation resolves

problems by itself, when other industries have the opportunity to trade, would be wrong.

Our survey suggests that the rising demand for aviation comes more from the effects of population change (growth, migration and more people in employment).

While individuals are travelling a little more by air, the bigger problem is that a lot more of us are travelling this way.

These competing public policy objectives have to be reconciled if we accept that the 'democratisation' of air travel is a good thing.

Polluter pays

One approach could be to adopt the 'polluter pays' principle – encouraging or requiring people to take responsibility for their emissions via carbon offsetting schemes.

A return flight from London to Athens, for example, represents emissions of 0.43 tonnes of CO_2 per passenger. At current prices, the offset cost would be £3.20.[22]

Flying from London to Auckland (return), and including an offset to reflect the substantial amount of high altitude flight, would entail an additional £67 for a carbon footprint of 8.92 tonnes of CO_2.

Both rates are substantially lower than the relevant rates of Air Passenger

Duty. APD is not an environmental or a demand management tax. The Treasury acknowledges that environmental benefits are secondary to APD's contribution to the public finances.[23] It is not clear that APD, even at these levels, has much of an impact on demand for flights.

Encouraging people to take responsibility for the CO_2 emissions associated with their choices in an affordable way seems better than heavy-handed attempts to manage demand.

Carbon offset schemes have been tried before,[24] but seem to have been affected by the introduction of APD.

A simple increase in general ticket prices (at say APD rates) is unlikely to have much of an impact on demand other than at the margins.

We believe carbon offsetting is more sustainable.

However, 'encouragement' is unlikely to be enough and some compulsion will be required to deal with the UK's climate change targets.

The government must work with all stakeholders to achieve this – not least to convince the public that it is not just a tax on aviation but an essential part of the UK's efforts to reduce carbon emissions.

This will require a more holistic approach to tax in the aviation industry. Tax, be it APD or fuel duties, is already controversial.

An offset scheme would also need to be part of EU-wide action to ensure a level playing field for UK airports acting as hubs. This playing field is already

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22 *Via the calculator at www.carbonfootprint. com. There is an argument for raising carbon prices, partly to be more realistic and partly to influence demand. UK power plants currently pay £18 to emit a tonne of CO2, plus €6 as a result of the EU Emissions Trading System. In contrast, the Committee on Climate Change model calculated a potential range of £100-£300 per tonne of CO2 by 2050. The Airports Commission referred to a 'carbon price' of £330 per tonne (which would put £500 on the 2050 price of a return flight to New York).*

23 *http://bit.ly/apd_consult_responses, para. 3.16. APD is being reformed and its future is uncertain.*

24 *Silverline, a small business airline which operated services between 2007 and 2008 offered such a scheme.*

uneven because of the distortions introduced by APD.

Aviation fuel (kerosene) has long been exempt from excise duty by international treaty – and, within the EU since 1992. Airline tickets are also zero-rated for VAT.[25]

Even though the European Commission has signalled its desire to end these exemptions, unilateral action is impractical and there is little chance of it being reviewed within the International Civil Aviation Organisation.

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25   *This apparent under-taxation of the industry was one of the initial prompts for introducing APD. Tickets for other forms of public transport, such as buses and trains, are also zero-rated for VAT.*

Chapter 6 – Regulators: who are they and what do they do?

Aviation regulators have a problem of 'role definition' – economic and safety regulation have become entangled.

National, European and global tiers of regulation are necessary, but complicated and sometimes in conflict.

The move to 'performance-based regulation' is creating an environment which puts market efficiency/cost reduction and public safety in conflict.

There are worrying signs of a developing market in regulation: regulators competing with each other seeking to become "the regulator of choice" marketing themselves to flag of convenience operators as the 'light touch' option.

Aviation is heavily regulated – with tiers at domestic, European and international/UN level. Regulators used to focus on safety and security, but many now have price competition in their remits.

This creates a tension within regulation and for the governments directing the regulators because safety and security come at a cost – yet aviation is increasingly operating on a 'low-cost' model.

The regulators' priorities are not those of the public.

The CAA's top-level principles for general aviation [which covers non-scheduled operations]:

- only regulate when necessary and do so proportionately
- delegate where we can
- deregulate where appropriate
- do not gold-plate, and quickly and efficiently remove gold-plating that already exists
- help create a vibrant and dynamic general aviation sector in the UK

The CAA's initiative stemmed from the government's so-called red tape challenge in 2013 and looked "at ways to reduce the regulatory burden on the general aviation sector".

It is perhaps unfortunate for the CAA that 2015 has seen two notable GA incidents: Blackbushe Airport on 31 July when a private jet crashed, killing three members of the Bin Laden family, and the Shoreham Air Show disaster on 22 August.

EU and UK regulators

The European Aviation Safety Agency (EASA) sets and monitors safety and environmental protection standards in member states.

The Agency works with national regulators on operational issues like aircraft certification and pilots' licensing.

In the UK, the EU's regulations are implemented and supervised by the Civil Aviation Authority – established in 1972 as an independent, specialist aviation regulator and provider of air traffic control services.

The CAA is both an economic and a safety regulator. Its functions include issuing licences to air traffic controllers, licensed engineers, professional and private pilots, commercial air operators, aerodromes and UK-registered aircraft.

NATS, the UK's air traffic management provider, was separated out in the late 1990s and became a public/private partnership in 2001.

The regulatory framework for UK airspace, joined with Ireland into one functional airspace block (FAB), is implemented via a performance plan, RP2, which sets targets for en route and terminal air navigation services up to 2019.

RP2 was jointly adopted by the UK and Irish governments and submitted to the EU in mid-2014.

Single European Sky

As with other areas of industry, the EU's focus has been to complete the single European market.

The Single European Sky was adopted as a concept in 2001 and then honed into SES2 in 2008.

The justification for SES was that airspace over Europe is fragmented and, therefore, costly. Fragmentation introduces delays and extends flight routes – although the calculations in both cases are controversial.

SES aims to create a harmonised air traffic management system by 2020 to sustain European aviation over the next 30 to 40 years.

It sought to co-ordinate the design, management and regulation of airspace across the EU by creating cross-border, functional airspace blocks (FABs). The FABs were designed around traffic so as to maximise operational efficiency.

SES aims to improve air navigation services' performance within each FAB by setting targets for safety, the environment, capacity and cost-efficiency.

European air traffic control organisations (known as Air Navigation Services Providers) are therefore under considerable pressure to change from being safety first public services into commercial, competitive businesses.

ANSPs have to accommodate increasing amounts of complex air traffic, while meeting demands from airlines and airports to improve performance while reducing charges.

SES 2+, a separate package, was drawn up in June 2013 in response to airlines' disquiet with progress towards the Single European Sky[26] and the belief

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26   The call for a new aviation strategy by five European leaders on 17 June indicates that they are still unhappy with progress.

that continuing airspace fragmentation was inefficient and expensive. Much was also made in SES 2+ of the potential environmental benefits of modernisation.

Member states are responsible for their sovereign air space and are not keen to lose that responsibility. They co-ordinate activities through EUROCONTROL, an inter-governmental body. The fact that EUROCONTROL is not an EU agency, and its membership goes beyond the EU, complicates matters.

Why we oppose SES2+

The aviation industry, and public confidence in it, rely on government oversight to ensure operational safety. Competition will not guarantee operational safety – indeed fierce price competition will put safety at risk.

Putting competition at the heart of policy-making in an industry which relies on achieving very high safety standards is not sustainable or sensible.

Safety is part of the service that passengers buy. Operators say they are committed to safety. But the temptation to cut costs by cutting corners is ever-present and increasing as liberalisation bites.

Prospect and the International Transport Federation believe the economic regulation of air transport should stay with the ICAO.

Prospect, other UK trade unions and the European Transport Workers' Federation (ETF), support the Single European Sky concept, but oppose SES2+ because it carries too many risks.

The European Commission is increasingly choosing not to engage with trade unions, to the point where workers in the industry are starting to express discontent with SES2+.

Prospect's concerns about how the regulatory environment is developing include:

- the performance regime for air navigation services in the UK is skewed towards reducing charges and risks putting profit before safety
- imposing a market on the UK's airport control towers risks a 'race to the bottom' if airport operators see air traffic control as a commodity and seek cut-price deals
- the impact on air traffic control staff and the increased strain on individuals in highly-stressful jobs
- moves to implement 'remote tower' operations could jeopardise air safety. Remote and virtual tower (RVT) is a new concept where the air traffic service at an airport is performed somewhere else than in the local control tower. The Irish Aviation Authority is already testing this and NATS is preparing a demonstration project for the UK
- unbundling navigation services will lead to fragmentation and the potential for compromise within the safety chain. Air traffic management services should be one, cohesive operation delivered by one provider and with appropriate state support
- a regime focused on reducing prices will starve air traffic control of the investment needed to reduce aviation emissions; require cuts in air traffic control staff and increase travel delays (in 2014 these were 0.61 minutes per flight for en route air traffic across Europe, and just 0.05 minutes per flight for the London area control)[27].

- a price-driven, cost-cutting regime cannot deliver a sustainable future for the UK aviation industry. The regulator needs to understand and value the fact that NATS is already providing a high-quality service
- moves to downgrade the aircraft licensing regime present substantial risks to aircraft, passengers and crew, as well as exposing the licensed engineer to potential (and grossly unfair) legal ramifications. Currently, a licensed engineer must physically inspect work carried out on an aircraft before releasing that aircraft back into service. However, some regulators outside the UK are operating systems in which the licenced engineer is not required to physically inspect the work carried out, but only to ensure that the paperwork is collated and correct. Prospect's Association of Licenced Aircraft Engineers do not think this is enough to guarantee that the aircraft can operate safely.
- the regulatory model needs to be reviewed. We do not think regulators should look after economic rules and safety standards
- regulators should not encourage flags of convenience ie those requiring licences being able to 'shop around' for the regime that provides opportunities to do as little as possible, as cheaply as possible.

Our members' views are clear: the market should not have a role in providing air traffic services.

Air traffic management is part of the national infrastructure and government must have a role.

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27   ie 37 seconds for Europe and just three seconds for the UK. http://bit.ly/atc_europe_performance.

World Trade Organisation's Trade In Services Agreement

The Trade In Services Agreement being negotiated within the World Trade Organisation has an annex on air transport services. The intention is to change the role of the International Civil Aviation Authority (the UN agency which has overseen international air transport economic and safety regulation for more than 70 years).

Aviation policy would be removed from governments, whose sole remaining obligation would be to enforce 'non-discrimination'.

In other words, international market forces and corporate decision-making would determine aviation policy rather than social dialogue and consensus between governments.

The ICAO is far from perfect – its air transport policy and regulation work is too focused on economic liberalisation, seeking reductions in the cost of states' regulatory functions and pushing for more competition.

Nevertheless, given the lessons of EU liberalisation (ie a model of airline travel which has placed cost cutting and flags of convenience at the centre of policy-making) we believe the TISA proposals are worrying.

Removing government controls and attacking national ownership rules will make it easier for flags of convenience to become established.
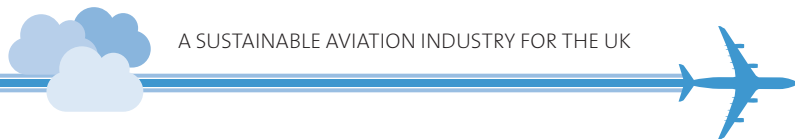
Chapter 7 – Aviation workers

Traditionally, aviation has relied heavily on a high-trust environment rooted in a skilled workforce doing quality work in well-paid and secure jobs, underpinned by collective bargaining and high rates of union membership. This model is under increasing pressure from market liberalisation.

It is not just employment standards that are under strain. Safety is threatened too. Fatigue is a particular concern as well-established regulation of working time is relaxed.

'Just Culture' policies and social dialogue will be key to protecting staff and the public.

Good work

Prospect has a major interest in good work, defined as work that is enjoyable, stretching and fulfilling and which offers employees:

- a voice at work
- fair pay and reward
- better change management
- engagement and respect.

Our Good Work manifesto[28] says these attributes are most likely to be found in organisations with established trade unions and good industrial relations.

Prospect has day-to-day differences with many employers in the aviation sector, but these are usually resolved within a solid framework of industrial relations.

We recognise the need to work with employers to sustain a sector that provides high-skill, high-quality jobs.

Managing fatigue

Nevertheless, fatigue is creating unacceptable pressures for those who work in the industry. Rotas are increasingly designed around:

- minimum rest periods between shifts
- pressure for quick turnarounds at airports to maximise the number of flights and
- shifts that are under-staffed, including in engineering maintenance and repair.

Price-based competition and cost-cutting are part of the problem. Safety is being compromised, with potentially devastating results for the travelling public and individual workers' health.

This is a direct result of a regulatory environment that acknowledges the importance of safety yet pursues economic efficiencies that seem to disregard the safety risks. The regulator – the CAA – must take proper and full ownership of worker fatigue.

The CAA sets standards and drives behaviours. Lax, or distracted, safety regulation means that operators are less likely to prioritise safety.

Our members say too many companies are making resource decisions that are driven by cost-cutting.

Workers regularly breach working time limits; are asked to sign opt-outs; and work overtime with little regard to the hours they have already worked. They will suffer fatigue and make mistakes as a result. This is alarming.

A study of fatigue in air traffic controllers conducted by NASA found that work schedules often led to chronic fatigue – making controllers less alert and a safety risk to the national air traffic system.[29]

Prospect believes aviation organisations should take five actions to address and manage fatigue:

- proactively manage people working shifts that are close to working time limits
- stop those involved in air safety from opting-out of the working time regulations
- establish a proper safety culture that is monitored
- minimise disruption and the risk of errors by investing in technology to help maintenance engineers manage their workloads
- promote resource and reward systems which do not rely on overtime to cover shifts, do not exploit demand for overtime for income reasons or engineers' desire to help.

These steps require a culture change and the language of economic efficiency must be toned down.

To put safety first, aviation organisations need to be able to invest and approach resourcing free from the need continually to cut costs.

Reporting safety incidents

New, stricter EU-wide rules governing how aviation employees report safety incidents will come into force in autumn 2015.

EU Occurrence Reporting Regulation 376/2014 aims to prevent accidents by reporting, analysing and following-up occurrences in civil aviation.

An 'occurrence' is defined as "any safety-related event which endangers or which, if not corrected or addressed, could endanger an aircraft, its occupants or any other person and includes in particular an accident or serious incident".

The regulation aims to shift Europe towards a system that foresees and prevents accidents rather than simply reacting after accidents.

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28   http://bit.ly/gw_manifesto.

29   http://bit.ly/faa_fatigue

A key component of the system is a 'Just Culture' ie ensuring that individuals are not blamed when reporting 'honest errors' but are held accountable for wilful violations and gross negligence.

Companies will have to put in place agreed internal policies on how such 'Just Culture' principles will operate. A national appeal body will also be established.

In the UK, the Civil Aviation Authority already has a mandatory occurrence reporting scheme in place under a 2003 EU regulation. So employers should have 'Just Culture' policies in place, but these may need to be reviewed to ensure they comply with the new rules.

Prospect is seeking consultation with the CAA on the UK's approach to implementing the new regulation.

Airbus accident, May 2013

The UK's Air Accident Investigation Branch report into the Airbus accident at Heathrow on 24 May 2013[30] found that the engine fan cowl doors, which had been left unlatched following scheduled maintenance, detached from the plane on take-off, damaging the airframe and a number of the aircraft's systems.

The technicians had both worked extensive shifts and had an increased risk of fatigue as a result.

The report called on EASA to publish amended requirements for implementing "an effective fatigue risk management system within approved maintenance organisations".

The human factors report said:[31]

"The culture in the operator's engineering division instead puts the onus on the workers themselves to monitor their hours and to refuse overtime if they were suffering from the effects of fatigue or would exceed the policy limits. Hours are monitored after the shifts are worked, when timesheets are returned, and workers exceeding the limits are reprimanded."

Putting the onus on workers to monitor their hours, and then reprimanding them for breaching their hours limits, is a damning indictment of a culture in which organisations abdicate their responsibilities for safety.

Bombardier aircraft incident, April 2010

A 2011 AAIB report into another incident also reported fatigue as a contributory factor. A Bombardier aircraft en route to Exeter on 24 April 2010 had to land at Bristol. It was leaking fuel because O-ring seals in the oil cooler were not fitted properly during a base maintenance check.

The report highlighted the fact that 97% of the operator's engineers had opted out of the working time regulations. The workplace culture was again based on individuals' responsibility for monitoring their own hours and confessing tiredness.

The report made six safety recommendations, two of which concerned managing and monitoring the risks associated with fatigue.

Two years before the Airbus accident, the AAIB called on the European Aviation Safety Agency to amend its standards on 'Acceptable Means of Compliance and Guidance' to encompass a fatigue risk management system.

This work is underway, but the amended AMCs have not yet been published. The AAIB has been informed that the amending regulation might be adopted in the second half of 2017. This work, in full consultation with the social partners, needs to be urgently concluded.

Social dialogue and standards

Worker support for the changes taking place in European industry is predicated on continuing and extending social dialogue. Employers, governments and workers' representatives must observe those protocols.

Respect for social and labour standards is a key part of the dialogue. The International Labour Organisation has recognised that liberalisation is a 'challenge' when it comes to providing decent and productive work.

The ILO and the International Civil Aviation Organisation must continue to play their part in advancing human factors at work.

Prospect's Good Work agenda has a part to play in addressing these problems and we will be progressing it with all the employers we work with in the industry.

We reject interference in the pay and conditions of service of our members from the regulators. Pay and conditions are agreed with employers through voluntary collective bargaining processes.

Prospect supports the TUC's call for employers to reach agreements with their trade unions which underpin good work. These principles were implemented successfully in other UK infrastructure projects, including Heathrow's Terminal 5 and include:

- trade union membership and association
- decent terms and conditions of employment, including a true Living Wage (as opposed to the redefined minimum wage)
- health and safety
- training and apprenticeships for young people
- equality in recruitment, selection and employment.

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30   http://bit.ly/aaib_airbus_2013. See Appendix 6 for analysis of fatigue, especially the report on human factors.

31   App 6-17.

Towards a sustainable aviation industry for the UK

After the Airports Commission