



# Sustainable Airport Development

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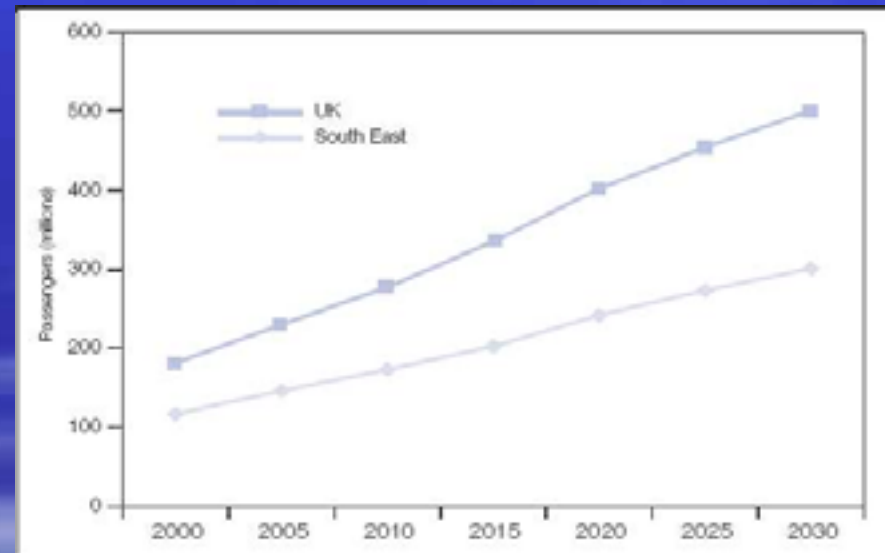
# Aviation, City and Regional Development

- Aviation increasingly important role in City and Regional development.
- Facilitates national integration and accessibility to the rest of the World.
- Particularly important for remote/island communities.



# The Aviation Growth Challenge

- Demand is strong and growing.
- Benefits of meeting demand are significant.
- The environmental and social costs are significant also.
- Growth will outstrip the rate of technological and operational improvement.
- Impacts climate change, noise and local air quality likely to grow.
- These impacts threaten to constrain airline/airport growth.



# The Sustainable Development Challenge

- The challenge for Government and Industry is to ensure adequate environmental protection whilst at the same time delivering social and economic development.
- UK multi-sectoral initiatives created to address this challenge for air transport:
  - Sustainable Aviation [www.sustainableaviation.co.uk](http://www.sustainableaviation.co.uk)

Technological and operational improvements

- The Omega Project [www.cate.mmu.ac.uk](http://www.cate.mmu.ac.uk)

More radical approaches including new business models.

# Sustainable Mobility

The European Union and its Member States recognise:

- Transport is important to competitiveness, social and EC integration.
- The significant environmental impacts arising from the transport sector.
- Different modes of transport have different roles.
- Different modes have different environmental impacts.
- Development of inter-modal, integrated public transport network.
- Systems to encourage use of the environmentally appropriate mode for the task required.

# Key Factors In Sustainable Aviation

- Airports develop as inter-modal transport hubs as part of an integrated public transport network



# Environmental Constraints on Airports

- The capacity of an airport is a function of:
  - infrastructure – runways, terminals, aprons;
  - air traffic control system;
  - quality of management.
- Environmental issues can restrict current operations or future growth and prevent full use of infrastructure.
- 66% European airports have environmental constraints.
- 80% expect constraints in 5 years [www.eurocontrol.int](http://www.eurocontrol.int)

# Environmental constraints limit operations when :

- The noise or emissions exceed:
  - regulatory limits or planning agreements.
  - tolerance within surrounding communities.
- Ground access is limited due to road traffic impacts.
- The airport cannot secure enough resources (e.g. land, energy, water) to allow normal operations and growth.
- Further infrastructure growth is restricted by sensitive habitats or buildings (houses).

# Aircraft Noise

- **Number 1 constraint affecting 2/3rds of major EU airports.**
- **Schiphol, Frankfurt, Paris, Heathrow.**
- **Noise exposure likely to increase – due ongoing rapid traffic growth.**
- **Opposition will grow – due increasing affluence, democratisation.**
- **Some airports spending EURO millions annually to address noise.**
  
- **Noise control programmes to minimise noise exposure.**
- **Community relations / investment programmes – increase tolerance.**

# Local Air Quality

- Limits set through EU and National Regulation.
- Zurich, Geneva, Heathrow?
- Emissions from ground transport (& aircraft).
- Solutions primarily land use planning development of public transport (this requires land).

# Climate Change

- Climate change impacts growing.
- EU Kyoto Commitments
- Airport regulatory limits in Sweden.
- Is increasing airport energy costs.
- Driving airports towards carbon neutrality.
- Transport, buildings, aircraft on the ground (60:20:20)
  
- Carbon neutral airport strategy
  - Renewable (wind, solar).
  - Non-carbon energy sources (hydrogen).
  - Heat stores.
  - Low energy terminal design.
  - Energy management programmes.
  - Carbon offset programmes.
  
- Climate Change implications of aircraft could reduce growth in demand.

# Utilities

- Adequate, secure, economic supply of energy and water.
- Adequate facilities to handle wastes
- Increasing competition for grid supplies - Italy, UK, California, NY.
- Water a capacity constraint in Spain.
- UK costs (especially energy) increasing rapidly (60% in one year).
- Recognised as a business risk.
  
- Greater investment in:
  - Lifecycle costing of projects.
  - Terminal design - low energy, water harvesting, recycling.
  - On and off site renewable energy generation (waste to energy).
  - Low energy/water operating systems.
  - Computer based management systems.

# Third Party Risk

- Munich, Hong Kong.
- Regulatory requirements set risk limits.
- Creates community fear and opposition.
  
- Land use planning, house purchase, infrastructure alignment, flightpath design.

# Habitat and Ecology Challenges

- Heathrow, Manchester.
  - Airports often surrounded by environmentally sensitive areas.
  - Can prevent further infrastructure development.
  - UK and EU Directives / Public opinion.
  - Regulators changing priority - sustainability & safety.
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- Secure adequate land holding.
  - Infrastructure design.
  - Species and habitat relocation, mitigation.
  - Bird 'proof' habitat creation.

# Compensating for Growth

- There are limits to growth, or the environmental implications of growth.
- Sustainable Development does not imply absolute limits, but rather limits imposed by the present state of technology and social organisation and the ability of the Earth to absorb the effects of human activities.
- We need to ensure growth is compensated for through technological improvement or manage social expectations.
- We also need to find radically new ways to deliver the same services with less environmental cost.

# Sustainable Growth of Airports

- Inter-modal transport hub.
  - Recognition that environment a potential capacity constraint and business risk and therefore need resourcing.
  - Planning for long term (30 years +).
  - Infrastructure – giving > priority to environment, lifecycle costing.
  - Strategy towards carbon neutrality.
  - Securing adequate land to enable future development.
  - Effective land use planning to ‘sterilise the area around airports’.
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- Airport and its service partners adopt an integrated approach.
  - Multi-stakeholder corporate responsibility programme.
  - Active investment in surrounding communities.

# What will the Future Look Like?

