Airport Environmental System
“Challenges of Creating an Airport Sustainability”

Mr. Jakrapop Charatsri
Airports of Thailand Public Company Limited
Airports in Thailand

Total of 38 airports

- Airports of Thailand Public Company Limited
  - 2 in Bangkok and perimeter
    - Suvarnabhumi Airport (BKK)
    - Don Muang International Airport (DMK)
  - 4 international airports at regional sites
    - Chiang Mai International Airport (CNX)
    - Phuket International Airport (HKT)
    - Hat Yai International Airport (HDY)
    - Mae Fah Luang-Chiang Rai International Airport (CEI)

- Department of Civil Aviation (DCA)
  - 28 regional airports

- Royal Thai Navy
  - U-Tapao Pattaya International Airport

- Bangkok Airways Company
  - Sukhothai Airport
  - Samui Airport
  - Trad Airport

Note: 1. AOT’s traffics account for 83% of Thailand’s air traffic.
2. Changing from Chiang Rai International Airport to Mae Fah Luang-Chiang Rai International Airport since March 13, 2010.
Aircraft Movements

All Aircrafts

<table>
<thead>
<tr>
<th></th>
<th>FY2012</th>
<th>FY2013</th>
<th>YoY%</th>
</tr>
</thead>
<tbody>
<tr>
<td>BKK</td>
<td>326,970</td>
<td>288,004</td>
<td>-11.92%</td>
</tr>
<tr>
<td>DMK</td>
<td>37,141</td>
<td>135,888</td>
<td>266.14%</td>
</tr>
<tr>
<td>BKK+DMK</td>
<td>364,111</td>
<td>423,992</td>
<td>16.45%</td>
</tr>
<tr>
<td>CNX</td>
<td>35,571</td>
<td>41,295</td>
<td>16.09%</td>
</tr>
<tr>
<td>HDY</td>
<td>14,573</td>
<td>17,056</td>
<td>17.04%</td>
</tr>
<tr>
<td>HKT</td>
<td>56,406</td>
<td>70,198</td>
<td>18.17%</td>
</tr>
<tr>
<td>CEI</td>
<td>6,674</td>
<td>8,882</td>
<td>3.12%</td>
</tr>
<tr>
<td>Total</td>
<td>480,335</td>
<td>559,423</td>
<td>16.47%</td>
</tr>
</tbody>
</table>

Note: 1. Fiscal Year starting from October to September
2. The percentage growth as shown is calculated from the full number of the air traffic statistics

Major LCCs Airline

- Domestic (3 airlines)
  - Thai Air Asia
  - Nok Air
  - OneTwoGo/Orient
- Thai Airlines
- International (22 airlines)
  - Air Asia
  - Thai Air Asia
  - Tiger Airways
  - Jetstar Asia
  - Jetstar Airways
  - CEBU Pacific Air
  - Indonesia Air Asia
  - Condor Flugdienst
  - Jeju Air
  - Jin Air
  - Firefly
  - Tiger Air
  - IndiGO Airlines
  - Eastar Jet
  - TVWay Airlines
  - Scoot
  - Spring Airlines
  - Mandala Airlines
  - Golden Myanmar Airlines
  - Juneyao Airlines
  - VietJetAir
  - Norwegian Air Shuttle

LCCs

<table>
<thead>
<tr>
<th></th>
<th>FY2012</th>
<th>FY2013</th>
<th>YoY%</th>
</tr>
</thead>
<tbody>
<tr>
<td>BKK</td>
<td>79,405</td>
<td>20,135</td>
<td>-74.64%</td>
</tr>
<tr>
<td>DMK</td>
<td>19,124</td>
<td>105,618</td>
<td>452.28%</td>
</tr>
<tr>
<td>BKK+DMK</td>
<td>98,529</td>
<td>125,753</td>
<td>27.63%</td>
</tr>
<tr>
<td>CNX</td>
<td>17,195</td>
<td>16,886</td>
<td>-1.80%</td>
</tr>
<tr>
<td>HDY</td>
<td>11,501</td>
<td>13,674</td>
<td>18.89%</td>
</tr>
<tr>
<td>HKT</td>
<td>21,612</td>
<td>24,535</td>
<td>13.52%</td>
</tr>
<tr>
<td>CEI</td>
<td>3,963</td>
<td>4,139</td>
<td>4.44%</td>
</tr>
<tr>
<td>Total</td>
<td>152,800</td>
<td>184,987</td>
<td>21.06%</td>
</tr>
</tbody>
</table>
Passenger Movements

### All Passengers

<table>
<thead>
<tr>
<th>Year</th>
<th>International</th>
<th>Domestic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>57.42</td>
<td>35.83</td>
<td>93.25</td>
</tr>
<tr>
<td>2011</td>
<td>66.30</td>
<td>42.11</td>
<td>108.41</td>
</tr>
<tr>
<td>2012</td>
<td>71.52</td>
<td>44.32</td>
<td>115.84</td>
</tr>
<tr>
<td>2013</td>
<td>86.13</td>
<td>54.26</td>
<td>140.39</td>
</tr>
</tbody>
</table>

- **FY2012**: 71,521,304
- **FY2013**: 86,134,962
- **YoY%**: 20.43%

### LCC Passengers

<table>
<thead>
<tr>
<th>Year</th>
<th>International</th>
<th>Domestic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>13.99</td>
<td>4.79</td>
<td>18.78</td>
</tr>
<tr>
<td>2011</td>
<td>17.65</td>
<td>5.81</td>
<td>23.46</td>
</tr>
<tr>
<td>2012</td>
<td>20.34</td>
<td>6.88</td>
<td>27.22</td>
</tr>
<tr>
<td>2013</td>
<td>26.61</td>
<td>9.71</td>
<td>36.32</td>
</tr>
</tbody>
</table>

- **FY2012**: 20,342,683
- **FY2013**: 26,605,563
- **YoY%**: 30.79%

**Note:**
1. Fiscal Year starting from October to September
2. The percentage growth as shown is calculated from the full number of the air traffic statistics.
AOT on the move

**Suvarnabhumi Airport Expansion Project**
- New Satellite Terminal
- Runway 3 and 4

**Phuket Airport Expansion Project**
- New International Terminal
- Renovation of Domestic Terminal

**Chiang Mai Airport Expansion Project**
- New International Terminal
- Renovation of Domestic Terminal

**Renovation of Terminal 1 and 2**
Challenges

and many more

Community Engagement

and many more

More Communities

More Noise

More Runways

More Passengers

More Land Use

More Aircrafts

More Infrastructure

More Flights

More Terminals

More Energy

More Resources

More CO₂

More Waste

Global Engagement

and many more

and many more

and many more

and many more

and many more

and many more

and many more

and many more

and many more

and many more

and many more

and many more
Challenges

- More Communities
- More Noise
- More Runways
- More Flights
- More Terminals
- More Passenger
- More Land Use
- More Aircrafts
- More Infrastructure
- More Terminals
- More Energy
- More Resources
- More CO₂
- More Waste
- Community Engagement
- Global Engagement
- and many more
- and many more
- and many more
Outline

Moving forward to become… **Green Airport**

Social and Community Engagement

Regional & Global Engagement
Airport Environmental Framework

Airport Environmental Operation
Environmental Protection & Environmental Monitoring
- Noise Management
- Wastewater Management
- Waste Management
- Air Pollution Control
- Drainage & Flood Control
- Ecology & Bird Control
- Transportation
- Infrastructure

Airport Environmental Sustainability
Our commitment to integrate social contribution with airport development.
- Carbon Management
- Energy Efficiency
- Natural Resources Preservation
- Corporate Social Responsibility / Engagement
Moving forward to become Green Airport:

Noise Management

Max. Rwy. Cap. 76 fl/hr

Predicted Noise Contour in EIA Report

Mar-Nov

Dec-Feb
Moving forward to become Green Airport:

Noise Management

Max. Rwy. Cap. 76 fl/hr

Revised Noise Contour: actual flight data

Mar-Nov

Dec-Feb
Moving forward to become
Green Airport:

Noise Management

- NEF > 40: 639 houses
- NEF 30-40: 15,676 houses
Total: 16,312 houses

- NEF > 40: 99 houses
- NEF 30-40: 2,511 houses
Total: 2,610 houses
Moving forward to become
Green Airport:

Noise Management

Airport Noise Compensation Program
- NEF > 40 Purchase land and houses
- NEF 30-40 Sound Insulation
Moving forward to become
Green Airport:

Noise Management

Noise abatement procedures

Aircraft Noise Monitoring System

- 21 Aircraft Noise Monitoring Stations were installed at Suvarnabhumi Airport.
- Phuket Airport is being installed.
- Chiangmai Airport is being designed.

Preferential Runway Use
Energy consumption is the major airport operational cost and also the biggest contributor of airport carbon footprint, which accounts for about 98% of AOT’s airport CO₂ emission.
Moving forward to become

Green Airport:

1. Energy Utilization
2. Improve the efficiency of electrical System
3. Engine modification; NGV, Electric, Hybrid
4. Improving Ground Transport
5. Generate electricity from renewable sources; Solar Power, Wind, Biogas

Airside Emission Reduction
- APU Restriction: Fixed Electrical Ground Power 400 Hz and Pre-Conditioned Air (PC-Air) are provided at all contact gates.
- Single Engine Taxi
- Electrical or clean energy vehicles are promoted to use in airside.
Green Building Concept is addressed in the engineering design of new passenger terminal buildings at Suvarnabhumi, Don Muang and Phuket Airport Development Projects. Buildings are designed to reduce the overall environmental impact of the buildings on human health and the natural environment by:

- Efficiently using energy, water, and other resources.
- Protecting occupant health and improving employee productivity.
- Reducing waste, pollution and environmental degradation.
Moving forward to become
Green Airport:

**Carbon Management**

- AOT adopted ACI Airport Carbon Accreditation Scheme in all 6 airports.

- **Suvarnabhumi Airport** has just been accredited “Level 2” (Reduction)

  Don Muang, Chiang Mai, Chiang Rai and Hadyai airports are planned to be accredited Level 1 (Mapping) in 2014

- **Carbon Management Plan**

  AOT set target to reduce carbon emission by 2% annually from 2011 to 2020
Moving forward to become Green Airport:

More traffic, more passengers
Generate more Waste

Waste Management System
1. ISO 14001 certified
2. **Zero discharge** approach which has absolutely no leakage to external communities.
3. Recycle; 10% of wastewater and 25% of domestic waste
4. Reduce the use of natural resources
5. Waste Utilization; Biogas, Fertilizer, Thermal Plant
Airport is not standing alone as **we** are getting **closer**

### 1. Land reform
- Remove houses from noise impacted area
- Remove bird habitat from aerodrome

### 2. Strategic Environmental Assessment (SEA)
Carrying capacity of all social and environmental aspects have to be concerned.
AOT aims to enhance collaboration with all stakeholders, both internal and external airport stakeholders are engaged closely in order to achieve an airport sustainability.

Our main groups of stakeholder are:
- Business Partners
- Social and Environment
- Community
Airport of Smiles reflects the pride of Suvarnabhumi airport's staff who represents Thailand in welcoming visitors from all over the world with smiles, a symbol of the Thai people, that encourage visitors' happiness and satisfaction.
AOT believes that sustainability can only be achieved when the livelihood of the surrounding community is improved as well.
Social & Community Engagement

Airport Environmental Fund
AOT provided 475 million USD for enhancing local environment in surrounding communities around Suvarnabhumi Airport (over 16,000 houses) which are impacted by airport operation. And about 500 million USD has been approved for future airport development.

Being a good neighbor
Get involved as a community members.
AOT’s CSR program covers 3 aspects

- Education
- Art & Culture
- Social and Environment.
Education

1. **Border Patrol Schools**
   Since 1999, AOT has been providing financial support to 5 Border Patrol Schools in remote areas. The funds have been contributed to construct new school buildings, dormitories, and to provide instructional equipment.

2. **Knowledge to Community**
   Community Learning Center is organized as a focal point for all groups of local people around the airports to share and learn from one another.

3. **AOT Scholarship**
   Scholarship have been awarded to students in airport vicinity area.

4. **Academic contests**
   Opportunity for students to demonstrate their proficiency in academic subjects including cultural and art skill.
Social & Community Engagement

together we learn

**Art & Culture**
1. Thai Music Performance in the terminal
2. Painting Contest
3. Animation Game Contest
4. Short film Contest
**Social & Community Engagement**

**Social**

1. **Promotion of Community Business**
   Handicraft and organic farming products are promoted to the market.

2. **Medical Checkup**
   Service is provided for surrounding communities.

3. **Volunteer**
   Volunteering activities; reading for the blind, making souvenir for charity.
Social & Community Engagement

Environment
1. Forest Fire Protection
2. Mangrove Reforestation
3. Carbon Neutral Man
4. Energy saving
Regional & Global Engagement
Regional Engagement

"One Vision, One Identity, One Community".

ASEAN International Airports Association: AAA

[Map of Southeast Asian countries with flags and labels: Myanmar, Laos, Vietnam, Thailand, Cambodia, Malaysia, Singapore, the Philippines, Brunei Darussalam, Indonesia]
Regional Engagement

"One Vision, One Identity, One Community"

ASEAN International Airport Association’s Environmental Working Group : AAA-EWG is a focal point of ASEAN Airport to work collaboratively in technical sharing and policy making which address the needs and limitations of each member country in order to unify working procedures for the better airport environmental management in ASEAN Community.

Areas of Interest

- Aircraft noise management
- Green initiatives
- Airport Sustainability
- Airport Carbon Accreditation
- Airport environmental planning
- Environmental impact assessment
- Renewable energy
- Animal strike and Pest control.
Regional Engagement

"One Vision, One Identity, One Community".

ASEAN International Airport Association’s Environmental Working Group: AAA-EWG++

Annual International Conference was held at Bangkok in August 2013
Munich and Narita airports were invited to share experience with AAA members
Regional Engagement

"One Vision, One Identity, One Community".

Together we go

As being a chairman of AAA-EWG, AOT is preparing to organize the 2nd Annual Meeting which the workplan and area of interest will be discussed for further cooperation
Global Engagement

sister airport

To strengthen collaboration between airports in human development, information sharing and enhancing airport business.
four foundation stones of airport sustainability

Airport Sustainability

Economic
Sustainable growth

Operation
- Safety & Security
- Level of service

Environment
Green initiatives

Social
Social contribution

Engagement
Local
International
Thank you

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