



Assistance for Action

Aviation and Climate Change Seminar

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Capacity Building Programs for Sustainable Development of Air Transportation in Indonesia 2012-2020

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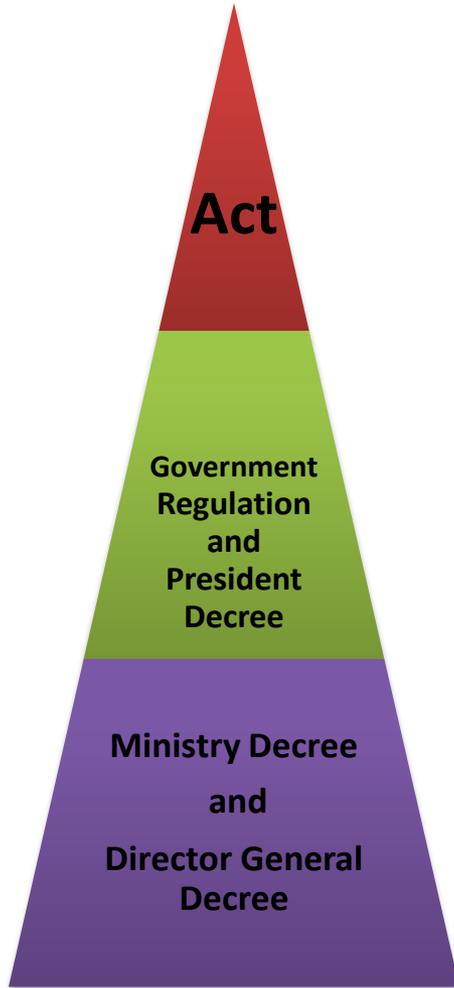


Outline

- **Indonesia Aviation Policy & Strategy on Mitigation of GHG**
- **Basket of Measures**
- **National Action Plan (Roadmap) on Mitigation of GHG**
- **Capacity Building Program and Future Plan**
- **Involvement of Public and Private Cooperation**
- **Institutional Cooperation with ICAO**
- **Summary**



Legal References



- 1. Indonesian Aviation Act, No. 1/ 2009**
 - 2. Indonesian Environmental Act, No. 32/2009**
- 1. Govt. Regulation. No. 27/2012, Environmental Certification**
 - 2. Govt. Regulation. No. 40/2012, Airport Development and Environmental Conservation**
 - 3. Govt. Regulation No. 41/1999, Air Pollution Control**
 - 4. Govt. Regulation No. 70/2006, Energy Conservation**
 - 5. President Decree No. 61/2011, National Action Plan on Reduction of GHG**
 - 6. President Decree No. 71/2011, National Implementation on Inventory of GHG**
- 1. Ministry Decree No. 909/2011, Ministry Transportation Working Group for Mitigation of Climate Change and GHG Emissions**
 - 2. DG Decree No. No. 58/2012, Working Group for Mitigation of Climate Change and GHG Emissions in Air Transportation**
 - 3. 37th ICAO Assembly 2010, Indonesia Action Plan on Aviation and Climate Change**



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Indonesia Aviation Policy and Strategy on Mitigation Emissions of Green House Gas





Basket of Measures

- 1. Measures regarding Policy, Rule-Making & Capacity Building of Human Resources of Stake Holders**
- 2. Airline Operator Carbon Emission Reduction Measures**
- 3. Air Navigation Services and Air Traffic Management Measures**
- 4. Airport Operator (Eco Airport) Carbon Emission Reduction Measures**
- 5. Fossil Energy Conservation Measures through Alternative Energy (Aviation Bio-fuels, Bio Diesel, Solar/Wind/Hybrid/Water-based Energy)**
- 6. Market-based Measures**



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The National Action Plan (Roadmap) on Carbon Emissions Reduction

	PROGRAMS	Mid-Term (RPJM)			Long-Term (RPJP)					
		2012	2013	2014	2015	2106	2017	2018	2019	2020
Legal & Cap Building	Develop Policy & Regulations	Establish policy, strategy, system, procedures, and regulations								
	Develop System, Data Base, Capacity Building	Establish the data base, methodology, analysis and calculation of emissions, perform capacity building of stake holders and dissemination of relevant information								
Aircraft & Operational	Fleet Regeneration	Replace 10% by 2012-2013 of domestic fleet		Replace dom. fleet with next generation technology by 15% between 2014-2017, and 5% int'l fleet						
	Aviation Bio Fuel	Research & Development		Testing		2% biofuel in 2016-2017		Biofuel used by 3% in 2018-2020.		
	Improved Operational & Maintenance Procedures				Implementation of new efficient operational and maintenance procedures by 2016					
Navigation & Air Traffic Management	Implementation of Procedures STAR-SID of Climb / Descent	Develop at 9 airports		Develop STAR-SID PBN at 24 International airports						
	Implementation of Direct Routes, RNAV5, RNP10	Develop new routes with shorter distance								
	Implementation of RNP Approach (RNP 0.3, 0.1)	9 airports		Develop RNP approach at 11 major airports			Restructure the ATS routes based on PBN of domestic and int'l routes			
Eco Airport & Equipments	Renewable Energy for Electrical Power	Research & Development		10 airports: partial supply of 7.5 MW by renewable energy						
	Airport Green Plantations				50 airports: access road & open area lighting replaced by solar energy					
	Modernization of GSE and Mobile Vehicles	Research & Development		Partial use of 10% biodiesel for GSE and mobile vehicles						
	Improvement of the lighting system by using LED				Install LED light technology (1000) at each airport and runway on 30 airports					

ROADMAP



Capacity Building in Air Transportation and Stake Holders 2012

- 1. DGCA Indonesia has been involved in Capacity Building for the Climate Change, Sustainable Transportation and Green House Gas Mitigation Program, focused on :**
 - **policy and regulatory framework,**
 - **national action plan and national appropriate mitigation actions,**
 - **technical guidelines on determination and calculation of emissions and potential reduction, etc.**
- 2. The Capacity Building initiatives have been developed with information and assistance provided at the national or international level through :**
 - **multilateral entities such as ICAO, UNFCCC, UNEP, World Bank**
 - **national government bodies : Ministry of Transportation, Ministry of Environment, National Development Planning Agency, National Council on Climate Change, etc**
 - **international bodies & NGO's such as: USAID, GEF, JICA, GIZ, SIDA, etc**
 - **seminars, conferences, job training, workshops, forum group discussions and familiarization sessions, etc.**



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Indonesia's Aviation

- 1. 60 Million pax per year : - 15 to 20 % growth
- 80% is domestic flight**
- 2. National Green House Gas Emission :**
 - Transport < 5% of Total National GHG Emission (National GHG mainly come from Forestry and Peatland)**
 - Transport is 23% National Energy related GHG Emission**
 - Aviation < 5% of Transport GHG Emission**
- 3. Part of National Mitigation Action Plan to Reduce GHG by 26% from BAU by 2020.**



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Touch Point for Emission Reduction

Initiatives / Measures

Key Role

1. Aircraft Modernization / New Fleet

Operators

2. Air Traffic Management and Navigation Services

Authority

3. Airport - Operational

Operators

- Green Terminal Building

- Support Equipments

4. Government Policy and Regulations

Authority

5. Alternative Energy :

- Photo Voltaic and Bio-fuel for
airport & supporting facilities

Operators

- Biofuel for Aircraft

ICAO/
Authority/
Operator/
Manufacturer

6. Market Based Measures

ICAO



Program Planning of Capacity Building In the Air Transport Sector

**The future program of Capacity Building
focuses on :**

- **Developing the regulatory framework, regulations and procedures**
- **Strengthening the institutional organization, role, function and responsibility**
- **Preparation and implementation of Aviation Biofuel and Airport Renewable Energy (R&D, Technology Transfer, Testing and Certification, Supply-Price and Risk Management)**
- **Developing the Operational Efficiencies of Operators**
- **Improving the ATM and PBN development**
- **Enhance the Eco-airport implementation**
- **Measures-Reporting and Verification (MRV)**
- **Inventory of GHG in Air Transportation**
- **Financial access, financial assistance mechanism, and Market-based Measures**



Future Capacity Building Program for Air Transportation Stake Holders

Priority of Assistance Needed :

- **Financial assistance mechanism**
- **Transfer of technology and R&D in Aviation Biofuel and Renewable Energy for Airports**
- **Inventory of Green House Gas in Air Transportation, and database development**
- **Enhance Operational Efficiencies for Operators (airlines, maintenance providers, airports, ground handling services)**
- **Improving the Air Traffic Management and Performance Based Navigation development**
- **Strengthening the institutional organization and management capability**



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Capacity Building with Involvement of Public and Private Sector





Capacity Building with Involvement of Public and Private Sector

Climate Change Financing

- Mobilizing concessional (grant and non-grant) resources**
 - Internal funds: Climate Change Fund, Clean Energy Financing Partnership Facility, others with bilaterals
 - External funds: CIF, GEF, looking ahead to GCF
- Maximizing market mechanisms**
 - Carbon Market Program: Technical Support Facility and upfront carbon finance—Asia Pacific Carbon Fund and Future Carbon Fund
 - Supporting new ones like Renewable Energy Credits in India
- Catalyzing private capital**
 - Direct project finance (lending, guarantees, syndications) and equity investment
 - Innovative financing mechanisms

ADB

2. TIMELINE Pelaporan Inventarisasi GRK (BUR & NatComm)

ICA = International Consultations & Analysis

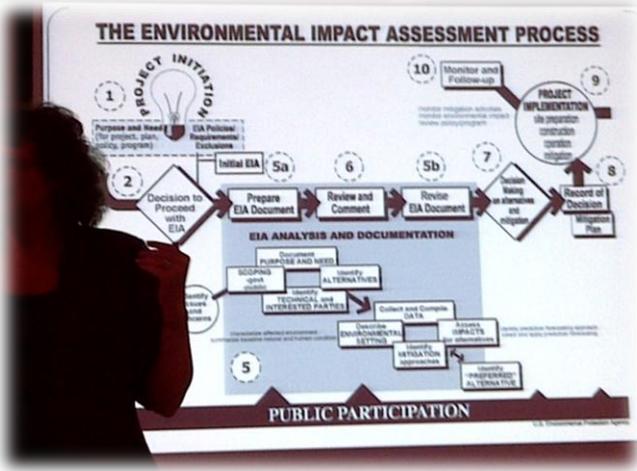
Preparation Stages

- GHG inventories
- mitigation actions
- needs and support received

MRV (Domestic/International)

ICA → BUR 1 (2014) → BUR-2/3rd NC (2016)

BUR = Biennial Update Report
NC = National Communication



JATROPHA and CAMELINA Jet Fuel

- A Boeing 747 with 400 passengers consumes on average 10,000 l per hour of flight. At 5000 h per year, total annual fuel consumption is 50 million litres.
- As one ha of Jatropha with intercrop Camelina plantation in Indonesia yields on average 3 MT, i.e. 3276 L per annum, 15,262 ha of plantation are needed to power one 747 jet continuously for one year.
- According to recent data from IATA, the airline industry will be required to adopt a mandatory blend of 5% within 3-5 years from now.
- On this 5% blend basis, 755 ha of Jatropha intercrop with Camelina plantation would meet the renewable fuel needs of one Boeing 747 during one full year of operation and save in the same time 23,405 trees (37 Ha of Forest) in Java-Indonesia.
- The yield of 10,000 ha plantation can keep a fleet of 13 Boeing 747 in the air for one year on a B5 blend and save in the same time save 310,000 trees (466 hectare forest) in Java-Indonesia.

IATA



The Indonesian Statement

- **Indonesia highlights the need to strengthen international cooperation between Contracting States, including provision of financial resources and financing mechanism, capacity building, research & development especially in aviation biofuel and renewable energy for airports, with support by ICAO.**
- **ICAO may also consider facilitating transfer of technology to minimize the technology gap between Contracting States in order to stimulate innovation and capabilities in the field of climate technology and GHG emission reduction technology.**
- **Indonesia encourage more regional cooperation in aviation environment under coordination of the ICAO.**



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Thank You

**Green Solutions for
a Brighter Future**