Energy Security and Biofuel for a Low Carbon Economy in the Asia-Pacific Region

International Forum for Sustainable Asia and the Pacific
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Outline

- Asia Pacific: An Overview
- ESCAP Background
- Energy Situation in AP
- Energy Security Paradigm Shift
- Biofuels Status and Potential in AP
- Biofuel and Sustainable Development Dimension: economic, environmental and social (MDGs)
- Future of Energy Security and Biofuels - To biofuel or not to biofuel?


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1. The Asia-Pacific: An Overview

- Population: 3.9 billion people or 2/3 of the global population
- Density: 1.5 times the global average
- Land surface: 40% of global land area
- Diversity and Disparity: LDCs (14), LLDCS (12), SIDS (16), Economies in transition (8) & developed economies (5)
- High GDP per capita (PPP) country & low country (Japan/US$33,100 & Tajikistan/US$1,300)
- 2/3 of the world's poor (1/5 lives on $1/day)

UNESCAP

53 Member states

9 Associate members

49 within the region


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2. ESCAP Background

- **Established in 1947 (Shanghai ➡ Bangkok)**
- **Regional development arm of United Nations**
- **A forum to discuss inclusive socio-economic issues & strengthen regional cooperation**
- **Main areas: poverty reduction, environment, social issues, statistics, transportation, trade, ICT & disaster reduction**
- **Environment & Development Division: Environment, Water and Energy Security Sections**


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Key Milestones

- MCED5 (Seoul, March 2005) adopted Green Growth as key regional strategy for achieving continued economic growth compatible with environmental sustainability
- 64th session of the Commission (Bangkok, April 2008) emphasized the need for transition towards a sustainable energy security path
- Low Carbon Development Path (LCDP) envisioned to facilitate essential transition in line with Green Growth approach (17-19 June 2009, Beijing)

17+18 June	Expert Group Meeting on "Towards a Low Carbon Development Path for Asia and the Pacific: Challenges and Opportunities to the Energy Sector"
18 June	Policy Dialogue on Energy Efficiency for Low Carbon Development in Cities: Challenges and Opportunities
19 June	Asia-Pacific Forum on Low Carbon Economy – China 2009

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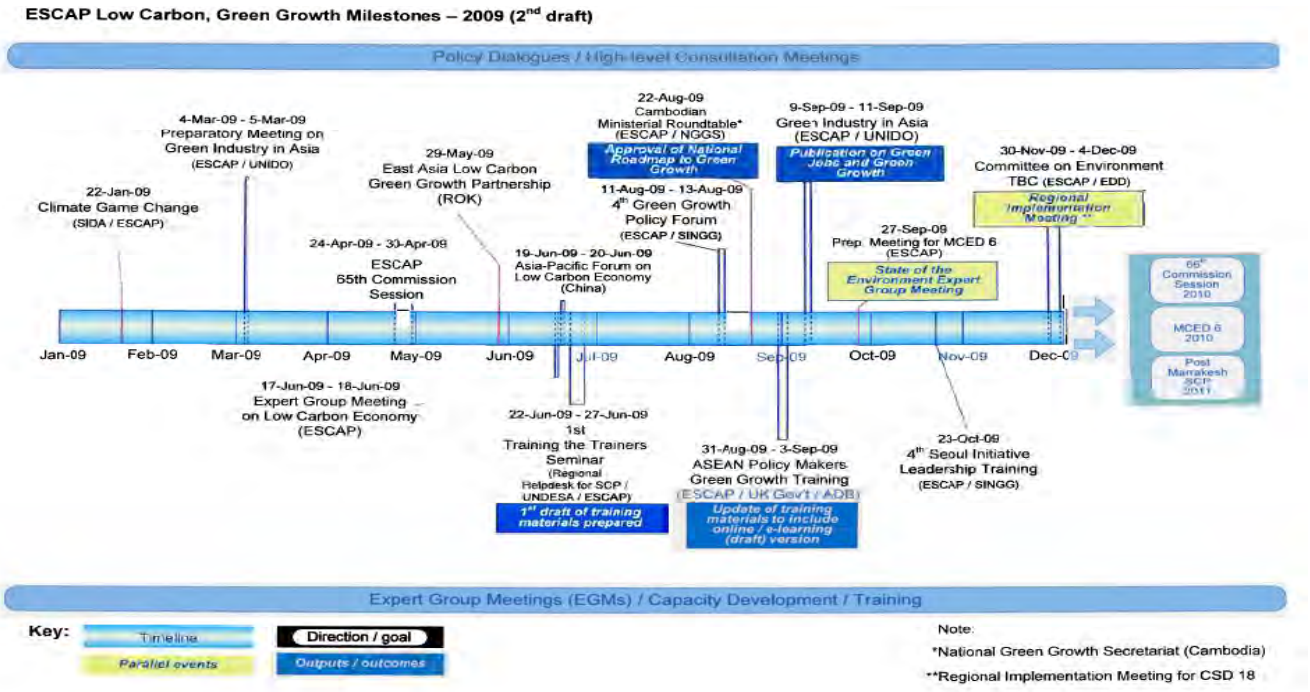
DFID Department for International Development

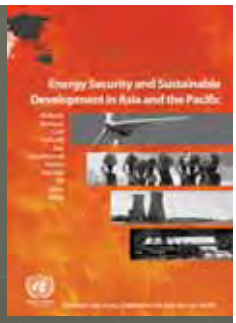
WWF

CITYNET

Roadmap to Low Carbon (2009)



3. Energy Situation in Asia-Pacific



Theme Study on Energy Security & Sustainable Development in AP
64th Commission, Bangkok, April 2008

- High dependency on fossil fuels aggravating AP's vulnerability to energy prices
- Share of fossil fuel consumption to remain 82% in 2030 under BAU scenario
- Shift to "quality of growth" and sustainable energy paradigm
- Regional energy system baseline scenario would require US$9 trillion up to 2030
- LDCs are most vulnerable to high oil price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Poor are paying disproportionately

According to UNDP, between 2002 & 2005, poor households in China, India, Indonesia and Lao PDR paid steeply for rising energy costs

- 171% more for cooking fuels
- 120% more for transportation
- 67% more for electricity
- 55% more for lighting fuels
- 33% more for fertilizers & other agricultural inputs
- 74% more for energy as a whole

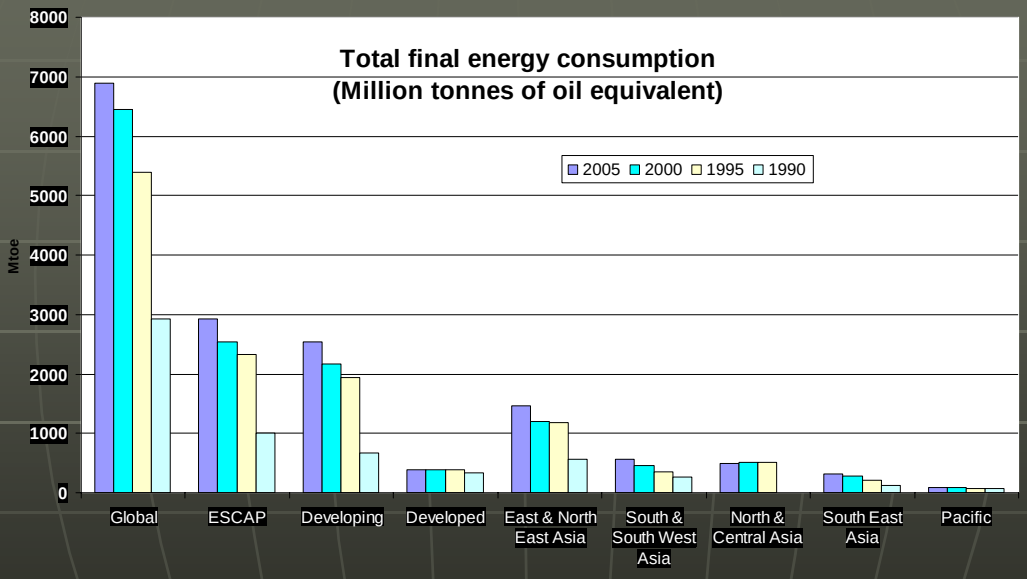
Snapshot of Energy Security Challenge for AP

- AP energy demand growth fastest, **more than twice the world average** requiring more energy
- **Equity threat**: **1.7 billion** people using traditional biomass, **1 billion** without access to electricity, per capita energy consumption well below world average
- **Ecological threat**: rising emissions, depleting natural resources, climate change impacts
- **Economic threat**: lower growth due to global financial crisis affecting energy development

Oil import dependency of selected countries

Country	Total Oil Supply (Thousand bpd)	Import (Thousand bpd)	Dependency (%)
China	5421.49	2023.96	37.33
Japan	5160.04	5224.50	100.00
India	2485.00	1710.64	68.84
Thailand	815.48	598.43	73.38
Republic of Korea	2032.33	2055.82	100.00
Philippines	316.04	318.82	100.00
New Zealand	136.55	110.44	80.88

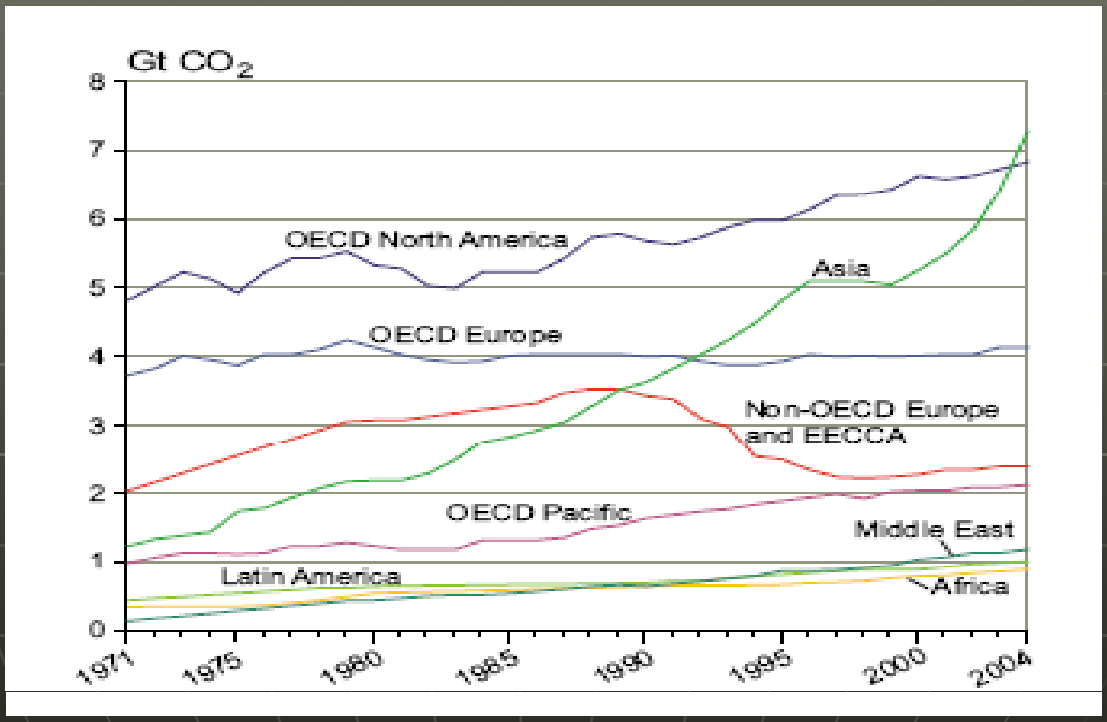
Energy consumption in AP



Relatively Low Energy Consumption

More than 60% of the World's population consumes just over 40% of the energy

Global trends in CO2 emissions from fuel combustion by region from 1971 to 2004



Note: EECCA = countries of Eastern Europe, the Caucasus and Central Asia.
Source: IEA, 2006.

Country	2000	2050
America	20.6	15.1
China	14.7	22.9
EU 25	14.0	7.8
Russia	5.7	2.8
India	5.6	9.2
Japan	3.9	1.8
Brazil	2.5	2.2
Canada	2.0	1.3
Republic of Korea	1.5	1.0
Mexico	1.5	1.7
Indonesia	1.5	2.2
Australia	1.5	1.0
South Africa	1.2	1.1
Rest of the World	23.8	29.9

Shares of GHG emissions in 2000 & 2050 (%)

Source: World Resources Institute, 2005; Matysek et al 2006

4. Energy Security Paradigm Shift

- To reverse carbon emissions and climate change trajectory
- To ensure energy supplies for sustaining socio-economic development
- To widen access to energy services by the poor contributing to the achievements the MDGs
- To minimize the impact of high and volatile oil/energy prices on the economy
- To promote regional and subregional energy cooperation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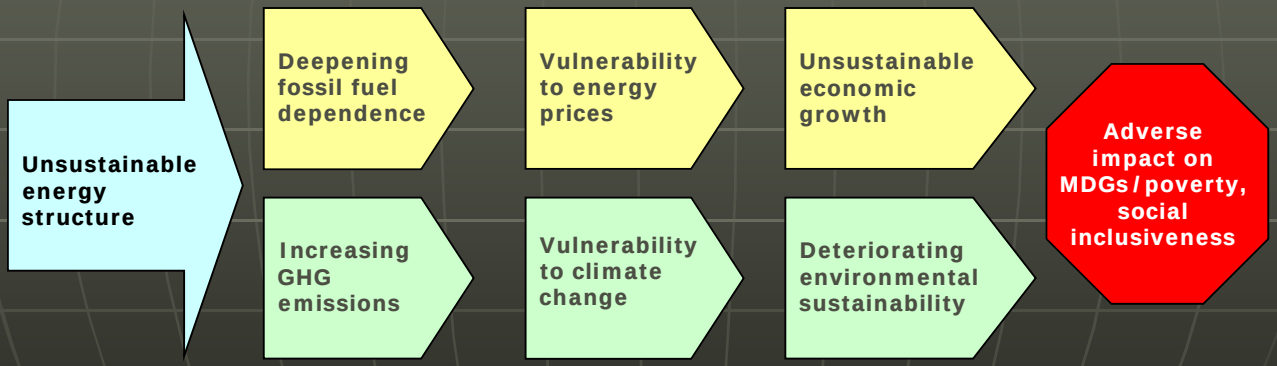
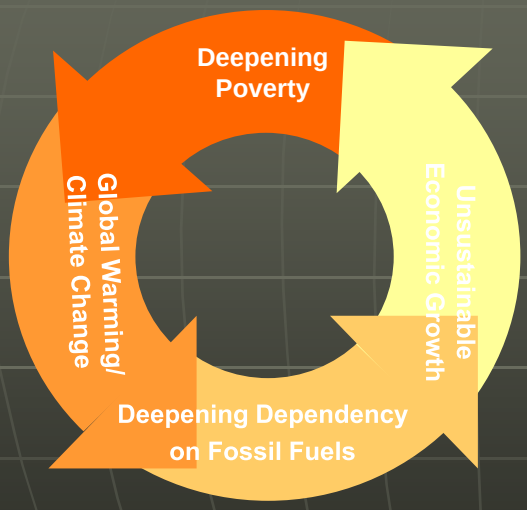
Dilemma with fossil fuels

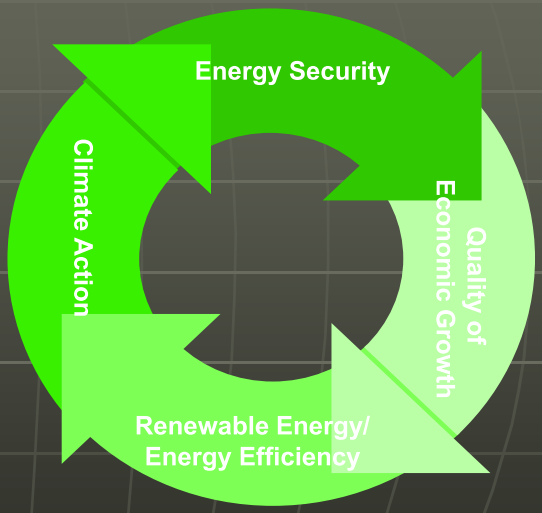
Unsustainable energy-economy-environment nexus



Need for a paradigm shift based on a sustainable energy scenario



Vicious Cycle



Virtuous Cycle

New Sustainable Energy Scenario vs. Baseline Scenario

- Total energy consumption could decrease by 7% in 2020 and by 11% in 2030
- Share of renewables could increase from 9% in 2005 to 17% in 2030
- Sustainable scenario could decrease CO_2 emission by 38% in 2030
- Savings of $766 billion in investment could be generated up to 2030

5. Biofuels Status & Potential in Asia-Pacific

- **Situation Analysis on Biomass Utilization & Trade in Asia & the Pacific with Particular Focus on Indonesia & Thailand**
  June 2007
- **Regional Forum on Bioenergy Sector Development: Challenges, Opportunities & the Way Forward**
  January 2008, Bangkok
- **Policy Dialogue on Biofuels in Asia: Benefits & Challenges**
  September 2008, Beijing
- **Theme Study: Sustainable Agriculture and Food Security in Asia & the Pacific**
  April 2009, Bangkok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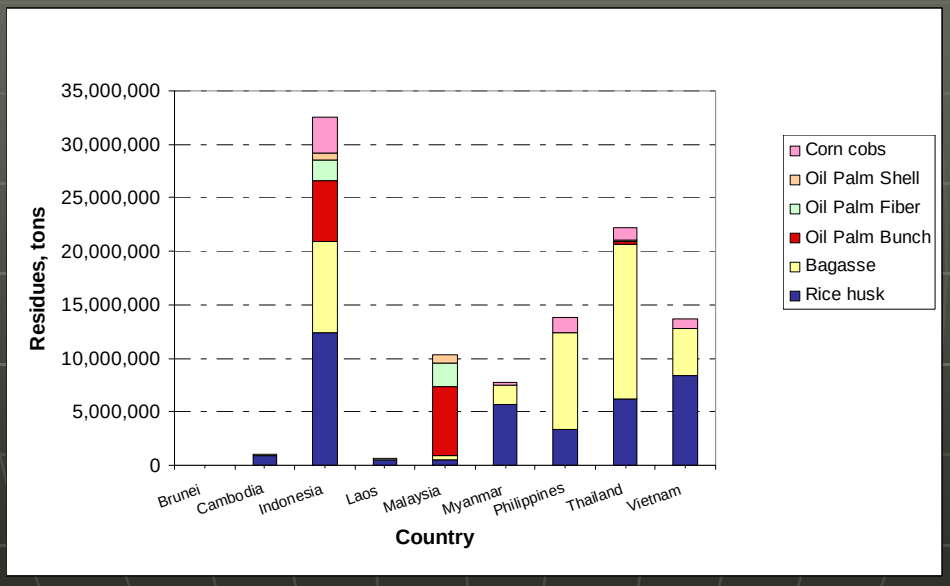
A. Situation Analysis on Biomass Utilization & Trade in Asia & the Pacific with Particular Focus on Indonesia & Thailand *June 2007*

Biomass potential in South East Asia

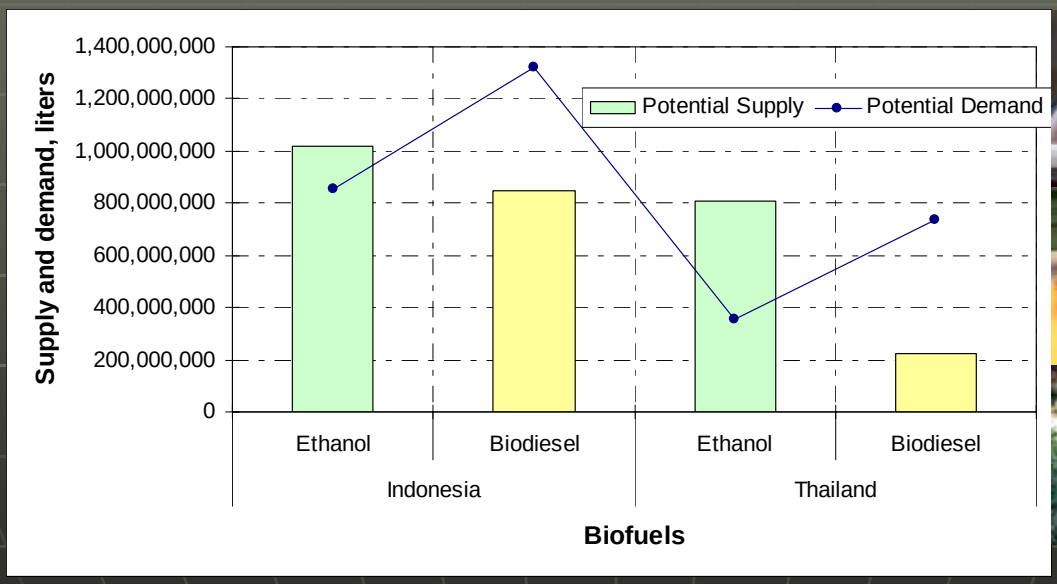


Estimates of Agricultural Residues in Southeast Asia, tons

A. Situation Analysis on Biomass Utilization & Trade in Asia & the Pacific with Particular Focus on Indonesia & Thailand

June 2007

Biofuel potential in Indonesia & Thailand



Estimated Potential Supply and Demand of Biofuels in Indonesia and Thailand

B. Regional Forum on Bioenergy Sector Development: Challenges, Opportunities & the Way Forward

23-25 January 2008, Bangkok

In collaboration with the Ministry of Agriculture and Cooperatives of the Royal Government of Thailand

Small-scale Biomass Gasification Power Plant (Capacity 100 kw)

Bio-Ethanol Plant Using Molasses (Capacity 100,000 L/d)

Cassava Biogas Plant in Korat, Thailand

C. Policy Dialogue on Biofuels in Asia: Benefits & Challenges

September 2008, Beijing

Major Outcomes from Summary Report

- For developing countries in the Asia-Pacific, biofuel programmes should address energy access for the poor at the community level.
- A regional body or a network should be created to provide certification on the production of sustainable biofuels.
- Trade within Asian countries should be given priority and opportunities explored for this trade to flourish.
- International cooperation and regional cooperation on biofuel and biomass resources among countries in Asia via dialogues, network creation and information sharing.

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D. Theme Study: Sustainable Agriculture and Food Security in Asia & the Pacific

April 2009

- **Rapid expansion of biofuels industry**
  - World total of 62 billion litres (52 billion litres bioethanol & 10 billion litres biodiesel)
  - Between 2001-2006, bioethanol grew by 22.7 % and biodiesel 43.2% per annum
  - In 10-15 years, biofuels could provide 25% of world's energy needs (FAO)

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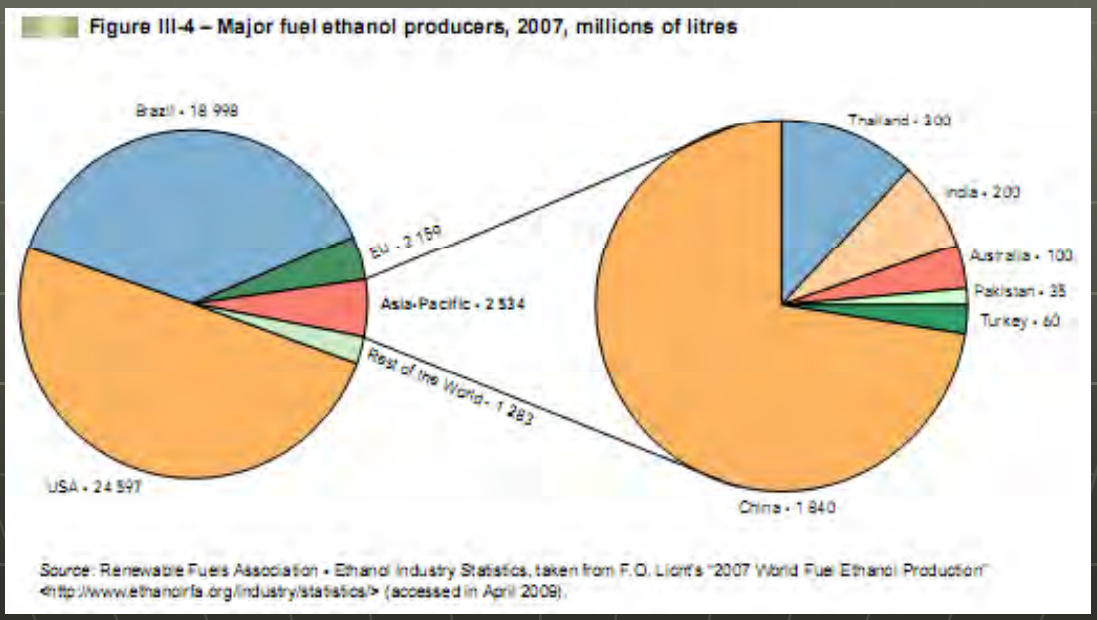
D. Theme Study: Sustainable Agriculture and Food Security in Asia & the Pacific

April 2009



Brazil + U.S. produce 88%, whilst AP only 5%

Biofuels and its impact on food security in AP

- **Biodiesel production in AP**
  - Europe responsible for 80%, Asia 10-20%
  - Malaysia and Indonesia are world largest producers of palm oil
  - Combines potential capacity of 22 billion litres
  - Palm oil, soybean, jatropha are main feedstocks for AP

Biofuels and its impact on food security in AP (cont'd)

- **Biofuel implications for AP**
- Industry still in development stages
- Production is relatively small
- Unlikely to have significantly contributed to food crisis
- Rice being primary staple crop, not affected

6. Biofuels and Sustainable Development Dimension: economic, environmental and social (MDGs)

"If we get it right, bioenergy provides us with a historic chance to fast-forward growth in many of the world's poorest countries, to bring about an agricultural renaissance and to supply modern energy to a third of the world's population."

Jacques Diouf, Director-General, FAO

"It is a crime against humanity to convert agriculturally productive soil into soil which produces foodstuffs that will be burned into [as] biofuel."

Jean Ziegler, UN Special Rapporteur on The Right to Food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Potential benefits of biofuels: GOOD

- Biofuels are carbon neutral (?)
- Reduced GHG (?)
- Biofuels can increase farm income
- Biofuels can improve energy security
- Biofuels can create new jobs
- Biofuels are simple to produce

Potential negative impacts of biofuels: BAD

- **Threat of biodiversity**
  - Clearing tropical forest, monotonous cultivation and genetically modified crops can cause significant distortion on biodiversity
- **Unsustainable land use**
  - Use of deforestation to extend arable land for biofuels will magnify GHG emission significantly rather than reduce them

Potential negative impacts of biofuels: BAD

- **Water shortage**
  - Expansion of arable land will require more irrigation
  - Biomass needed to produce one litre of biofuel evaporates between 1000-4000 litres of water

- **Food inflation and food security**
  - More requirement of land due to the increase in biofuel consumption leads to shortage of food and inflation in food market

7. Future of Energy Security and Biofuels - "To biofuel or not to biofuel"?

Sustainable and regulated biofuels

- AP would eventually need to forge and reach a greater degree of consensus on biofuels
- AP should continue policy deliberations in support of global consensus along the lines prescribed in the CFA
- National biofuel plans and strategies to provide a standard and regulatory framework that is sustainable and consistent with policies on poverty alleviation, climate action and rural development
- Need for a full life cycle assessment (LCA) on biofuel crops produced in the region as information source for regulating and certifying biofuel production


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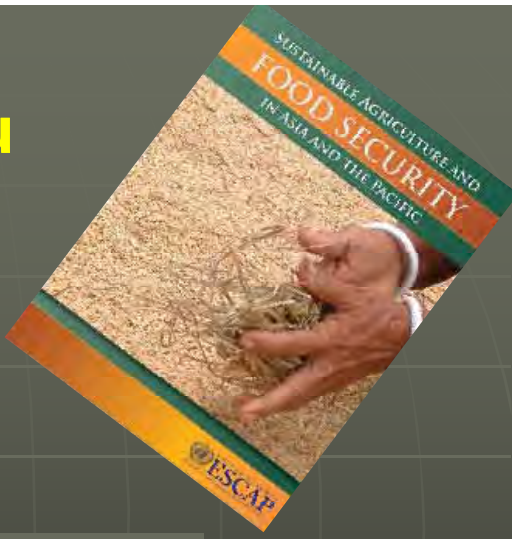
Thank you



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