

**Trends in sustainable renewable energy policy in Asia and the Pacific**



Pranesh C. Saha  
Chief, Energy Resources Section  
Environment and Sustainable Development Division  
UN ESCAP

**Third Green Growth Policy Dialogue:  
Renewable Energy: Technology, Markets and Policies in Southeast Asia**  
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**Outline of the presentation**

- An overview of development of renewable energy (RE) in Asia and the Pacific
- Key factors driving RE development
- Policy Issues, challenges and opportunities for RE development in Asia and the Pacific
- Best practices (Success stories)

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**Overview**

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Asia & the Pacific regional development

- Large population (~ 4 billion or 60% of the world total in 2005)
- Rapid economic growth in developing countries
  - >6 % average GDP growth rate from 2000-2005
- Wide diversity

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A substantial portion (around 80 % in most developing countries) of the population of Asia live in rural areas

Around 22 per cent of the region's population is estimated to be living on less than \$1 per day. This equates to 767 million people or two-thirds of the world's poorest

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Current Regional Energy Scene in Asia and the Pacific

- Relatively Low Energy Consumption Level

Total final energy consumption (excluding combustible renewables and wastes)

More than 60% of the World's population consumes less than 40% of commercial energy

Note: 1990 totals for ESCAP, developing and developed countries exclude Central Asia  
 \*Source of data:  
 IEA (2004), Energy Balances of Non-OECD Countries  
 IEA (2004), Energy Balances of OECD Countries

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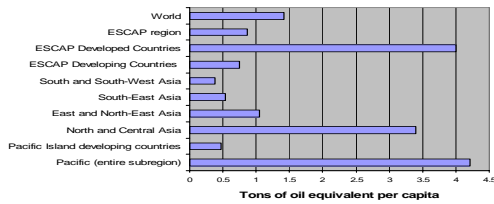
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## Per capita energy consumption is around 60% of the global average

Per capita energy consumption (2005)



Source: Extrapolated from United Nations. *Common Database*, <[http://unstats.un.org/unsd/cdb/cdb\\_help/cdb\\_quick\\_start.asp](http://unstats.un.org/unsd/cdb/cdb_help/cdb_quick_start.asp)>, accessed September/October 2005.

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## Electricity Access in 2002

Country or Area Name	Electrification rate %
Afghanistan	2.0
Bangladesh	26.3
Bhutan	4.54
Cambodia	18.3
India	44.4
Indonesia	52.5
Korea, Democratic People's Republic of	20.0
Lao PDR	34.0
Myanmar	5.0
Nepal	25.9
Pakistan	53.0
Philippines	89.1
Thailand	91.1
Sri Lanka	65.5
Viet Nam	79.6

Lack of access to modern energy by rural population (South Asia: 30% of rural population has access to electricity vs. 68% of the urban population)

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## Key Factors Driving RE Development

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**Factors driving RE policy**

- High energy demand
- High and volatile oil/energy prices
- High dependency on traditional energy in rural areas
- Enormous resources (share of RE)
- Rising role of RE (lead by technology push and market pull)
- Environmental benefits

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**TOTAL FINAL ENERGY CONSUMPTION/DEMAND IN 2004/2020**

Total Final Energy Consumption 7,100 mtoe (2004)      Total Energy Demand 9,754 Mtoe (2020)

Source: Adapted by ESCAP from APERC, 2002 and IEA, 2003 PC Saha, UNESCAP United Nations ESCAP

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**High vulnerability to oil price**

- Oil price remains consistently high (\$US70/bbl)
- Higher oil prices hit the low income countries the most
- Many countries depend heavily on imported oil/energy
- Many of these countries do not have much options for substitution

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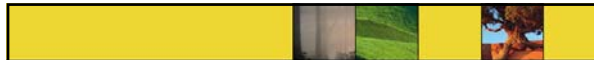
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## Dependency on traditional renewable Energy Resources

- Traditional energy share (>55% in ESCAP region)
- Traditional energy share in TPES (Nepal 90%, Lao PDR 90%, Myanmar 65%, Bangladesh 50%, China 18% and India 23%)
- Biomass and hydropower abundant and vital in many countries
- Modern form: Wind and solar energy are gaining grounds;
- Other RE potential also good: biomass based energy (biogas, gasification and bio-fuel)

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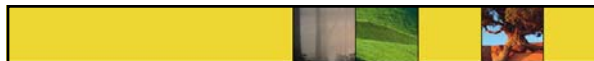
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## Share of RE In energy supplies in Asia and the Pacific

- In 2003, share of CRW in TFC:
 

– World	14%
– ESCAP region	20%
- In 2003, share in world production of combustible renewables and wastes
 

– ESCAP	55 %
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- Modern use of RE = <2.0 % (in which, heating 0.7%, power generation 1.2%, biofuels 0.2%)

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## Rising role of Renewable Energy

- Supplementary to the commercial energy
- Benefits to the environment
  - Improvement of eco-efficiency
  - Climate change concern and opportunities (CDM!)
- Renewable energy – Green form of energy
  - Technology push (R&D; technology innovation, falling prices, etc.)
  - Market pull (economies of scale, growing involvement of private sector etc.)
  - Innovative financing (pubic-private-NGO partnership, micro-credit, carbon financing)

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Key Challenges and Opportunities for RE Development

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Key Challenges

- Inadequate institutional, legal and regulatory framework to encourage market penetration and expansion of renewable energy technologies
- Lack of innovative financing, grants and subsidies or economic incentives
  - Pricing / internalizing of external costs
- Inadequate awareness and appreciation on the potential and RETs

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Opportunities

- Recent global and regional trend offers much hopes
- Enormous RE resources in the region
- Technologies are available and becoming competitive
- Interests of stake-holders (public and private) growing
- Positive impact of oil price

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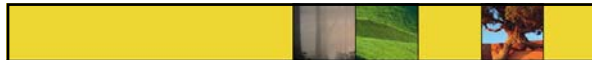
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## Best Practices (Success stories)

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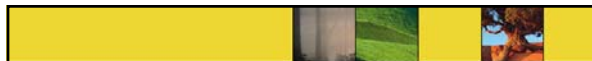
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### Global successes in modern RE supplies(2005)

**Electricity**

- Installed capacity: 182 GW; 4.4% of total power capacity
- Investment: US\$38 billion vs. US\$160 billion conventional
- PV (grid-connected technology)
  - the fastest growing energy technology - 55% growth rate (2000-2005)

**Transport**

- Biofuels: exceeded 36 billion liters, >3% of total gasoline consumption

**Impact**

- Direct Job: about 2 million (manufacturing, operations and services)
- Increased access to modern energy service in rural areas
- GHG mitigation

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 Source: Renewables 2006, Global Status Report

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### Countries with renewable energy targets in the region

Australia	9.5 TWh of additional electricity from RE per year by 2010
Bangladesh	5% by 2010 and 10% by 2010
China	10% of electric power capacity and 5% of primary energy by 2010; 16% of primary energy by 2020
Fiji	Fiji Electricity Authority to become a renewable energy utility by 2013
India	10% of added electric power capacity during the period 2003-2012; 15% of power capacity; 10% of oil consumption
Korea	5% of total primary energy by 2011
Malaysia	5% of electricity by 2005
Nepal	91% by 2007; 93% by 2017 and 95% by 2027
Pakistan	5% of power generation by 2030
Philippines	100% increase in renewable energy power capacity by 2011
Thailand	8% of total primary energy by 2011
Viet Nam	2% by 2010 and 3% by 2020

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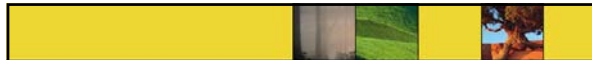
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## Renewable Energy and Power Generation Policies

- **Renewable Energy Tariffs or Feed-in Tariffs**
  - China, India (state/province level), Indonesia, Sri Lanka, Thailand (SPP)
- **Renewable Portfolio Standard (RPS)**
  - India (Maharashtra, Orissa & Gujarat), Thailand
- **Others**
  - Direct capital investment subsidies
  - Direct production payments
  - Tax incentives & credits; sales tax and Vat exemptions
  - Public competitive bidding for specified quantities
  - Renewable energy funds

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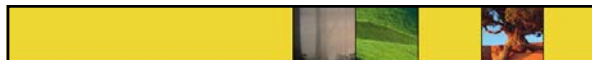
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## Renewable Energy for Rural Poor

- **Rural electrification**
  - *Bangladesh, China (Township Electrification Programme), India (Remote Village Electrification Programme), Indonesia, Nepal (REDP), Philippines, Sri Lanka, Thailand and Viet Nam*
- **Productive use of RE**
- **Alternative and more efficient way for cooking**

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## UNESCAP Renewable Energy Initiatives

- **In support of MDGs and Environmentally Sustainable Economic Growth (Green Growth)**
  - Eradicate extreme poverty and hunger (Goal 1)
    - Access to clean and affordable energy is pre-requisite for poverty alleviation and a driver of economic growth
  - Ensure environmental sustainability (Goal 7)
- **Follow-up to the World Summit on Sustainable Development (WSSD), 2002 (access and efficiency)**




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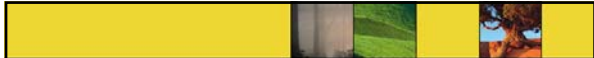
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Thank you

**Further information**

<http://www.unescap.org/esd/energy/>

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