Quantum Leap in Wind Power in Asia: Context, Barriers and Objectives

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ADB Strategy 2020

Strategic Agenda:

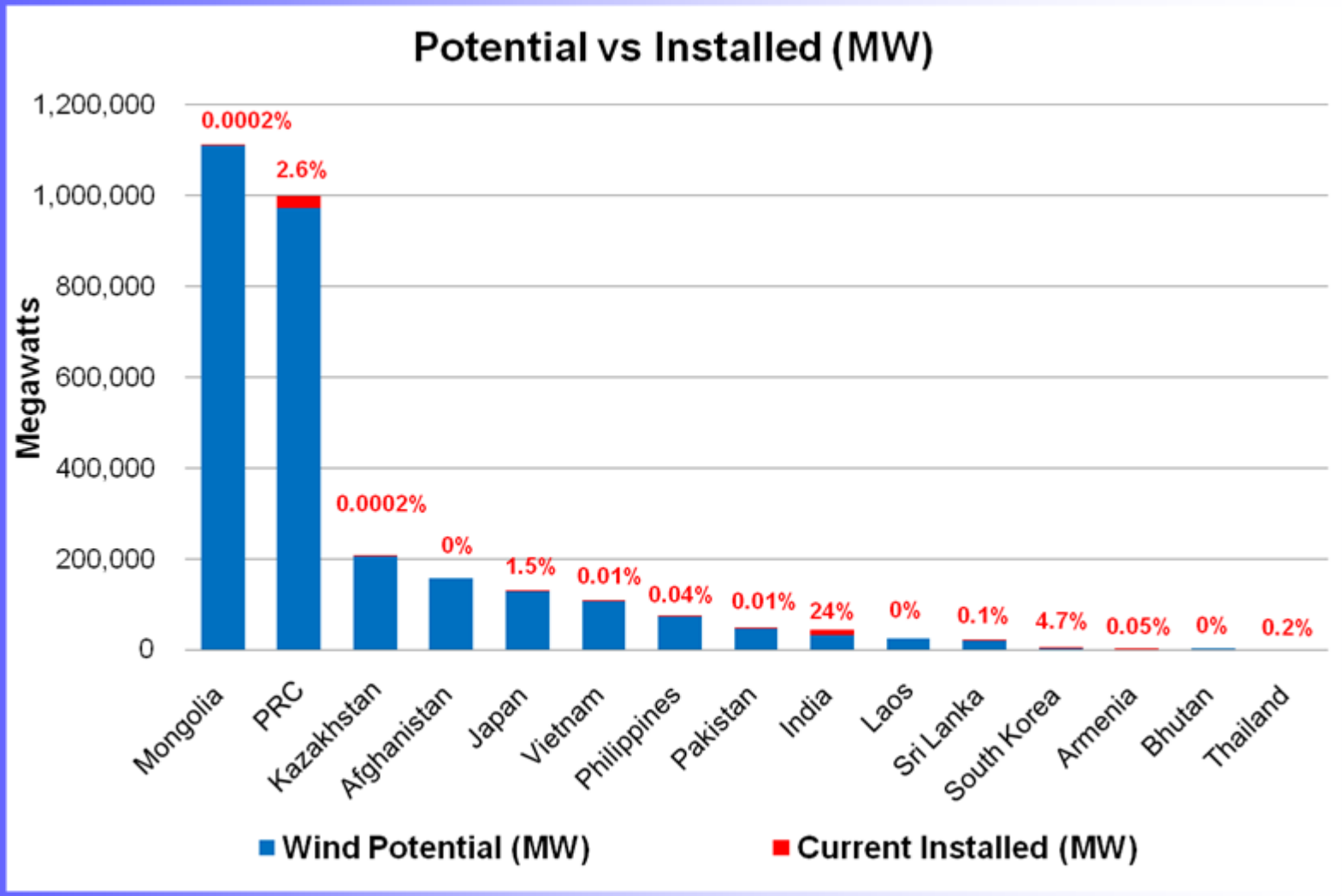
- Inclusive growth
- Environmentally sustainable growth
- Regional integration

2009 Energy Policy

Three Pillars:

- Promoting energy efficiency & renewable energy
- Maximizing access to energy for all
- Promoting energy sector reform, capacity building, and governance

Asia Wind Potential



Barriers to Scaling Up Wind

- Policy and Regulations
- Risk Perception and Financing
- Institutional
- Technical/Infrastructure
- Economic and Financial
- Market

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Quantum Leap in Wind Power

OBJECTIVES:

1. *Access* to clean and affordable energy

> Reach more than 5 million people

> 1 GW wind in DMC Asia (excluding PRC and India)

> in 5 years

> 2 million tons per year reduction in CO2

2. *Capacity building* for wind as well as renewable energy promotion

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How do we get there?

Phase I: Stakeholder Consultation

Quantum Leap in Wind Power in Asia, 21 June 2010

180+ Participants from 35+ Countries, of which: 50 Consultants and Academics; 45 Project Developers; 25 Governments; 15 Turbine Manufacturers; 15 Financiers; 15 Utilities; 40+ ADB staff – Manila and Country offices

Phase II: ADB Wind Strategy 2011-2013

Technical assistance US$ 2 Million for: (i) Wind Energy Development Roadmap (ii) Wind Resource Assessment, (iii) Knowledge and Capacity Building, (iv) Pre-feasibility and economic analysis, and (v) Preparation of business models

Phase III: Wind Investments 2011 onwards

Support public & private projects

- Pilot wind farms (about 100 MW each)

- Support to over 1.0 GW wind power, over the next 5 years

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Phase I: Stakeholder Consultation

- **Lessons from China and India Wind Power Development**
- **Country Wind Roadmaps for: Armenia, Pakistan, Philippines, Sri Lanka, Thailand, and Vietnam**
- **Discussion of barriers and solutions to wind development in Asia**
- **Design of the Technical Assistance**
- **SARI/USAID conference & roadmap for Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka**

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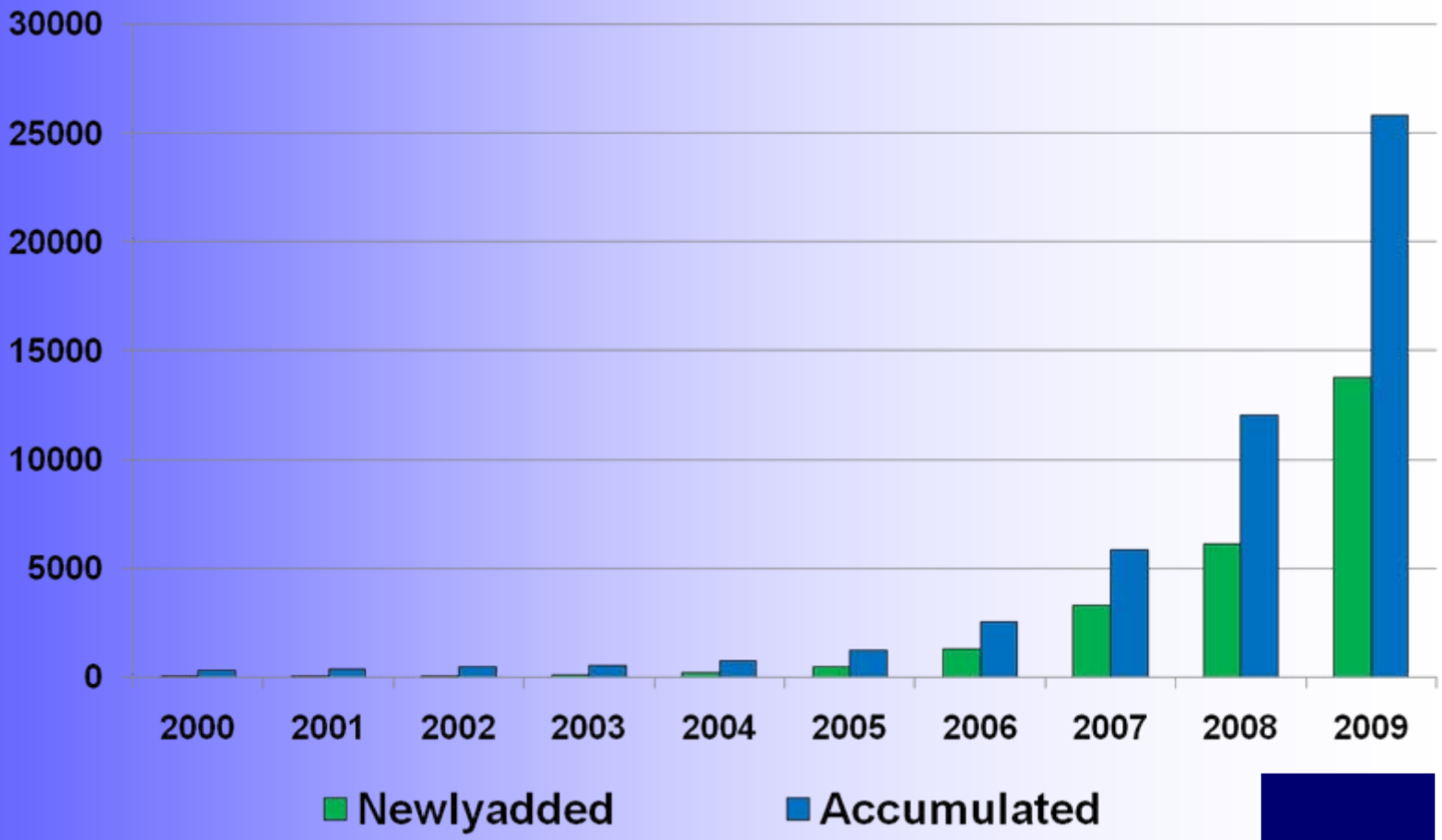
China Wind Power Development



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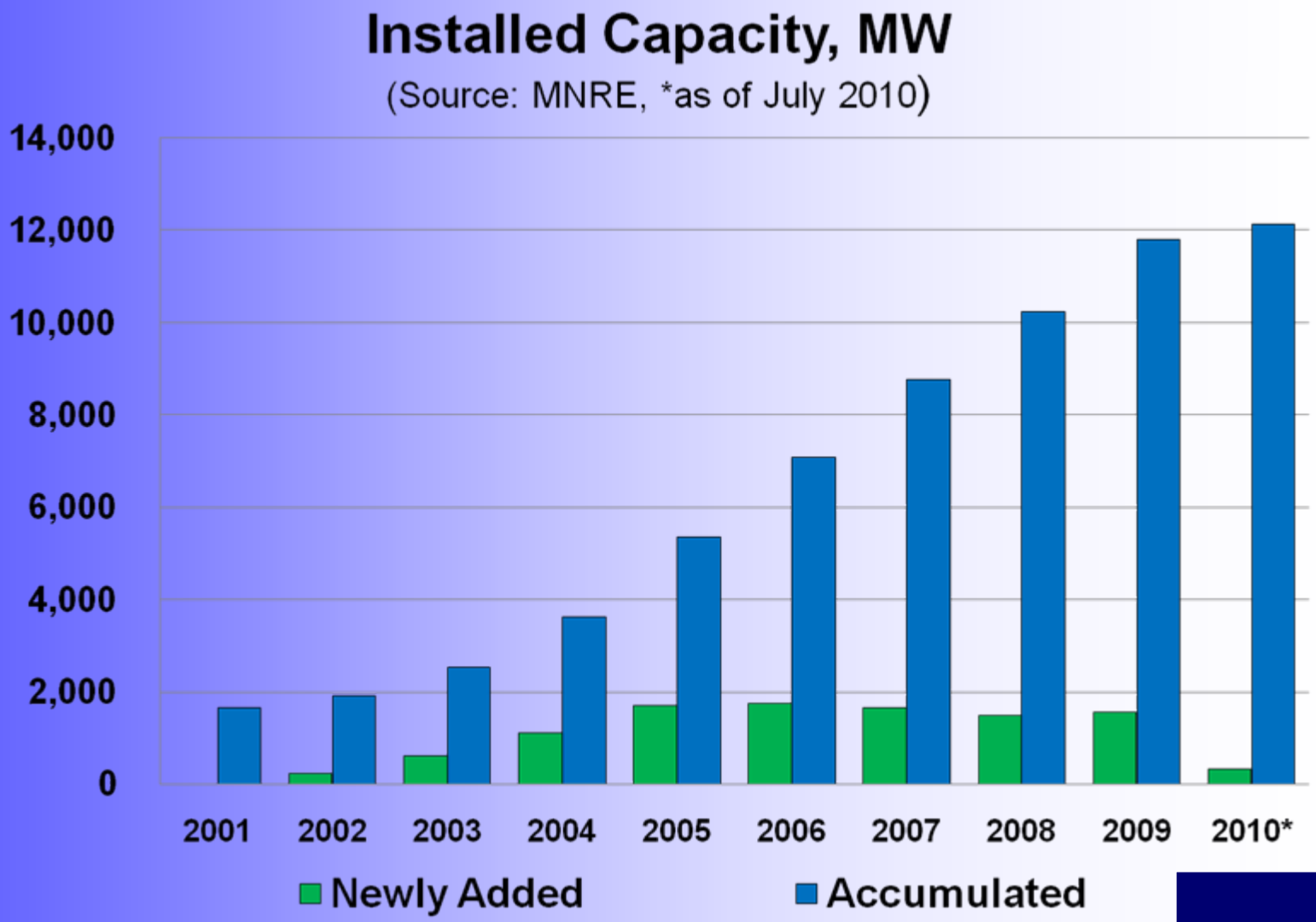
India Wind Power Development



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Phase 1: Lessons

- China and India are two leading markets today
- Fastest growth rate for wind is now in Asia
- Started building human resources…
  & wind mapping…
  & demonstration plants more than 15 years ago
- Huge domestic market with same or similar rules; no barriers to trade; above critical mass for local manufacturing
- Political commitment to provide grid & adequate tariffs
- Stable, but adjustable policies: learning by doing

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Is Wind Power ‘too expensive’?

1. **Renewable costs are going down while fossil fuel costs are expected to go up**
2. ***Economies of scale: as supply increases, price goes down***

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20+ Years of Wind Turbine Development

	1981	1985	1990	1996	1999	2004
Rotor (Meter)	10	17	27	40	50	77
KW	25	100	225	550	750	1,500
Total Cost	$65	$165	$300	$580	$730	$1,200
Cost/kW	$2,600	$1,650	$1,333	$1,050	$950	$800
MWh	45	220	550	1,480	2,200	5,600

- **Rotor area per turbine 60 times up**
- **Generator size 60 times up**
- **Energy output 120 times up**
- **Price per turbine 18 times up**

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Is Wind Power ‘too expensive’?

1. **Renewable costs are going down while fossil fuel costs are expected to go up**
2. ***Economies of scale: as supply increases, price goes down***
3. **Compare with cost of no power**
4. **Energy diversity, security and sustainability**
5. **Future carbon market**
6. **Externalities - Environmental costs to society**

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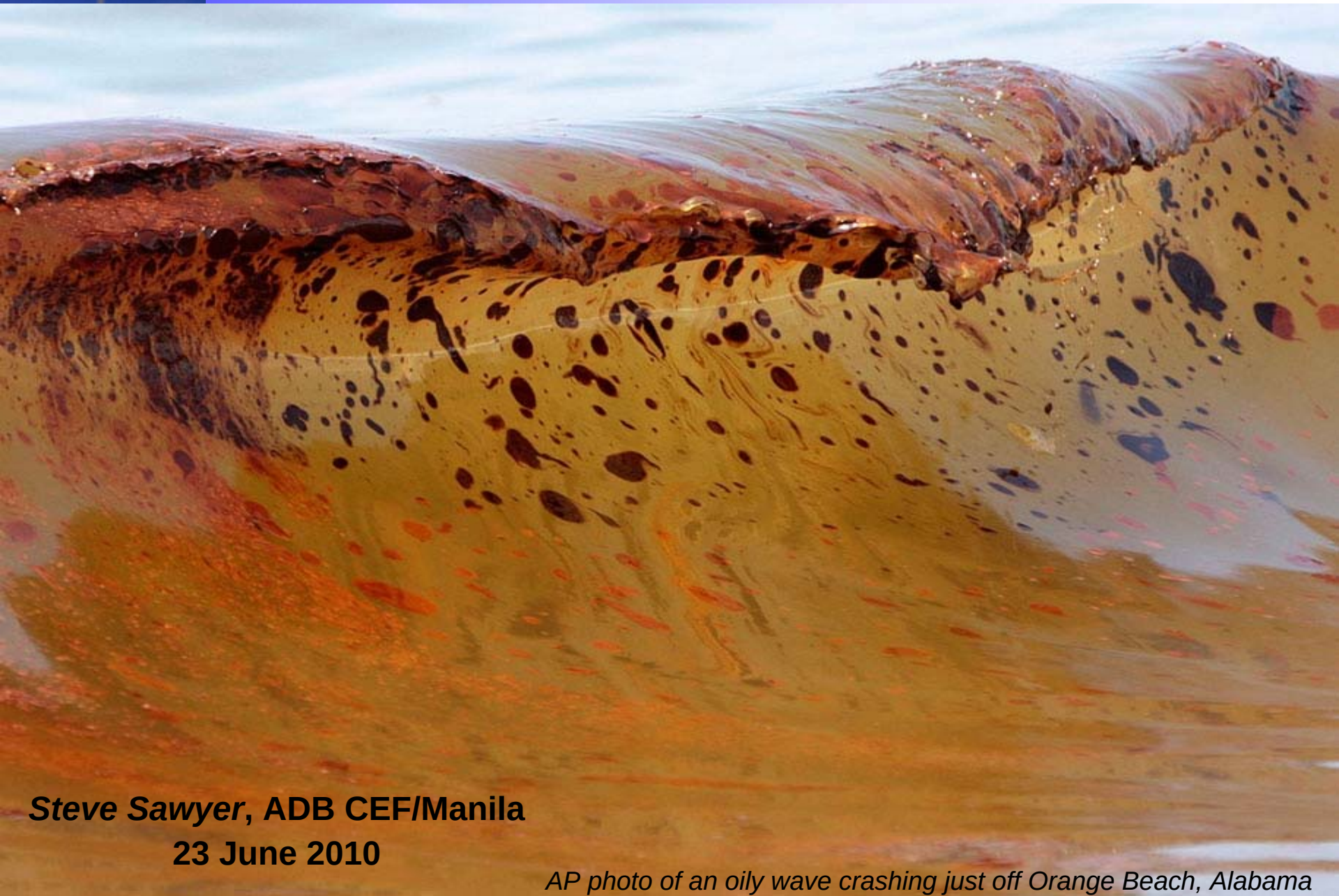
A thousand word picture



***Steve Sawyer*, ADB CEF/Manila**

23 June 2010

AP photo of an oily wave crashing just off Orange Beach, Alabama

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7. **Subsidies to conventional energy – globally > US$ 500 billion annually**
8. **Europe after 2012: *wind power least cost option for adding new capacity***

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Phase II Activities

DMCs: MONGOLIA, PHILIPPINES, SRI LANKA, VIETNAM

DURATION: 3 Years, 2011-2013

COMPONENTS	BARRIERS ADDRESSED
Wind Energy Development Roadmaps	Policy and Regulations, Institutional, Market
Resource Assessments	Risk Perception and Financing
Knowledge and Capacity Building	Institutional
Pre-feasibility Studies	Technical/ Infrastructure
Business & Financial Models and Draft Contracts	Economic and Financial, Market

Steps in Developing Wind Power

1. Identify resource potential
2. Set Renewable and Wind targets
3. Provide Policy and Regulatory Frameworks including feed-in-tarrif
4. Initiate demonstration projects
5. Encourage Private Sector involvement for scale-up

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Important Country Characteristics for Wind Development

- Commitment by policymakers to develop wind energy;
- Legitimate public authority to set rules and obligations;
- Privatization/liberalization of the electricity market;
- Grid that has enough capacity and technical stability to accept large amounts of wind energy;
- High electricity prices compared to wind; and
- A large enough commercial wind energy potential

Source: UNDP-GEF Promotion of Wind Energy: Lessons Learned from International Experience

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How can we work together?

Modes of ADB Assistance for Clean Energy:

Public sector assistance	Loans, Grants, Feasibility Studies (TA)
Private sector finance	Loans, Equities, Guarantees, Feasibility Studies (TA)
Catalytic tools for clean energy	Clean Energy Financing Partnership Asia Pacific Carbon Fund, Future Carbon Fund Technical Support Facility EEI, EFA, STI, Solar Energy Initiative
Policy and knowledge management	Policy dialogues with DMC governments Research, trainings, conferences, publications, capacity building (TA)

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Thank You

Contact details for more information

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