Regional Cooperation for Energy Security in South and South West Asia

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Energy Security Concerns of the Sub Region

- **Energy and Poverty** (Issues of access)
  - *for cooking*
    - 2.7 b people (Global) without access to clean cooking facilities; 840 m (India) > 100 m in Bangladesh and Pakistan each.
  - *For lighting*
    - Globally, 1.3 b people are without access to electricity. 289 (India) and 96 m (Bangladesh) and (64m) Pakistan.

- **Energy and growth** (availability & affordability)
  - inability to meet energy demand required for growth;
  - high import dependence,
  - high and volatile prices;

- **Energy and Environment** (sustainability)
  - Depleting resources
  - Not in my backyard concerns
  - Regulatory and enforcement deficits around resource development
  - Rising carbon emissions

Source: (UN, 2012)
Outline

I. Energy contexts of the Sub Region

II. Domains for enhanced cooperation

III. Key messages and mechanisms for energy cooperation
Sub Regional (SSWA) Energy Characteristics

Energy consumption vis-à-vis income level
Source: (UN, 2012), (UNESCAP, 2012)

Per capita energy consumption and HDI
Source: (UNDP, 2011) and (UN, 2012)

The sub-region’s energy mix

Level of electrification (%)
Ongoing energy trade

- Oil and gas: Iran is a significant exporter; impact of extra-regional politics needs to be factored in

- Petroleum products: India, a subregional refining hub

- Trade in power: Bhutan and Nepal offer substantial surplus hydro-electricity;
## Existing and emerging regional interconnections

<table>
<thead>
<tr>
<th>Country</th>
<th>Regional interconnections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>Power system is fragmented. Externally is interconnected with and imports from Iran and Central Asia</td>
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<tr>
<td>Bangladesh</td>
<td>Interconnection with India under construction</td>
</tr>
<tr>
<td>Bhutan</td>
<td>Externally interconnected with India, exports power to India. Some small imports from India as well.</td>
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<tr>
<td>India</td>
<td>Externally interconnected with Nepal (exports power to) and Bhutan (imports power from); sub-sea interconnection with Sri Lanka for export of power under development; lines with Bangladesh under development</td>
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<tr>
<td>Iran</td>
<td>Interconnected with Afghanistan, Pakistan and Turkey to export power</td>
</tr>
<tr>
<td>Maldives</td>
<td>Not interconnected</td>
</tr>
<tr>
<td>Nepal</td>
<td>Interconnected with India, imports power in limited quantities</td>
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<tr>
<td>Pakistan</td>
<td>Interconnection for imports of power between Central Asia (via Afghanistan) under discussion</td>
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<tr>
<td>Sri Lanka</td>
<td>Interconnection with India for import of power under development</td>
</tr>
<tr>
<td>Turkey</td>
<td>Interconnected with Iran for import. Interconnection between Central Asia (via Afghanistan) under discussion</td>
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Source: Adapted from Gippner (2010)
II Domains for enhanced cooperation:

1. Harnessing complementarities better: resources, uses, capacities

- **Resource distribution**
  - Oil (Sri Lanka), Natural gas (Bangladesh, India), Coal (India, Pakistan), Hydro resources (Bhutan, Nepal), Renewables.

- **Seasonal complementarities in consumption**
  - in power production and demand (Summer monsoons in Nepal and India) and economies of scale.

- **Technical and financial capacities**:
  - project design and engineering services, construction supervision for projects, and finance. Bhutan’s hydropower development with India’s assistance presents a good example.
2. Scaling up use of renewable energy

- **Biomass:**
  - Cleaner use of traditional fuels is a policy priority in most sub-regional countries; India’s lead in development of clean cookstoves and gasifiers provides an opportunity for technology dissemination.

- **Solar and wind:**
  - India and Bangladesh’s manufacturing base in solar PV modules, and solar thermal systems, can be employed for RE advancement in the region.

- **Small hydro:**
  - Run-of-the-river projects in water-abundant regions;
  - Regulatory frameworks to minimise externalities of hydropower generation.
3. Joint action on energy and resource efficiency

- **Buildings**
  - buildings and industrial sectors: development and implementation of building codes (GRIHA)

- **Industry**
  - Resource efficiency and pollution standards.

- **Enhancing Institutional capacities**
  - within energy ministries and their affiliates, power utilities and ESCOs.

- **Removal of barriers**
  - lack of awareness, education and inadequate access to technology and finance.

- **Policy interventions**
  - for inducing changes in consumer behaviour, including appliance labelling and tightening of fuel economy standards

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**Energy intensity of GDP (in $/kgoe)**

![Graph showing energy intensity of GDP for different countries and years](Graph.png)

*Source:* (World Bank, 2012)
Energy access and Clean Energy Case studies in Asia

Importance of multi-level and multi-actor approaches

The 2012 TERI-IGES-AEI study analysed innovative experiments and policy innovations addressing energy access and clean energy needs in developing South Asian and South East Asian countries.

Source: TERI, IGES-AEI, 2012
What works to deliver energy outcomes?

Some lessons

1. **Mechanisms for coordination and cooperation** amongst different agencies or stakeholders
2. **A needs based customized approach to energy service delivery** in financing as well as technology adoption
3. **A distributed strategy across technology and governance levels for clean energy development** links what is happening in the market and at the grassroots back to the lab and to those who make policies based on such feedback loops.
4. More than making a technology or measure available, it is important to ensure that it enjoys **acceptability and a buy-in from the target group**.
5. Market development strategies and development of market driven programmes require **more stakeholder participation** that can provide benchmarking standards to main product quality and ensure technology delivery.
6. **Innovative finance mechanisms** that lay emphasis on self-sustainability, away from grant based approaches have been effective. Major sources of feasibility-viability gap financing have been multilateral and bilateral funding. New financing models such as carbon financing are being explored to ensure self-sufficiency and financial sustainability.
7. **Appropriate risk regulatory frameworks** are needed to address the management of wastes from selected technologies (for instance solar PV panels) so that manufacturers can design solar modules, which are safer and easier to reuse and recycle, and markets to be developed for the same.

Source: TERI-IGES, 2012
4. Creation of efficient sub-regional markets, efficient and inclusive institutions

Feasibility of subregional natural gas grid and power grid has been discussed extensively

- Exploration of natural gas in Bangladesh and India, and inclusion of Iran, are key for a regional gas grid.
- Regional organisations/initiatives – SAARC, BIMSTEC, USAID/SARI-Energy, multilateral banks, have championed the cause of energy cooperation

Subregional impetus will help develop appropriate institutions and policies domestically

- Establishment of financially sustainable energy entities
- Predictable regulatory environment and cost-reflective pricing of energy goods and services; targeted subsidies
5. Joint infrastructure development
Existing & Proposed Gas Pipelines

- IPI and TAPI pipelines: Reflect strategic importance of transit countries
- Gas pipeline extending from India’s west coast to Pakistan, and cross-border petro-products pipeline; win-win solutions hampered by political considerations
5. Infrastructure development cont..

- Shared initial capital, and reduction in technical and operational costs

**Power plants and transmission lines**
- Underway: Development of plants in and export of hydro-power from Nepal and Bhutan to India, Bangladesh; India-Bangladesh cooperation in thermal power.
- Power transmission from India to Sri Lanka, from India to Bangladesh, from Iran to Afghanistan, and import of power to Iran from Tajikistan through Afghan territory, under consideration.
- Internal transmission lines development and reduction in T&D losses, are key.

**Crisis response coordination**
- Establishment of joint strategic oil reserves: Access could be provided in lieu of capital investment/rental payments and/or participation in procurement of oil.
III Key messages for cooperation

- Thinking beyond national borders
- Translation of opportunities for energy cooperation into expected benefits for the region’s people;
- Domestic policy priorities, and prevalent domestic strengths need to be factored in.
- Trust building at all levels
- Making regional pipelines happen
  - Need to increase stakeholders, interlock, spread risks
  - Need of investor confidence, reciprocal access, financial capital, and government backing on pipeline projects in geopolitically risky areas
Catalytic Mechanisms required for South-South cooperation towards energy change

- **‘Clearing houses’** regionally of ideas, science, experience, technologies, and local knowledge that can be used to address subregional, national and local energy access concerns.

- **Energy Technology Centers** for sharing & transferring improved practices;

- **‘Incubators of energy innovations’** - linking designers, builders, users, financiers - “design led, technology rich, constraint based Innovations” (V Govindraj)

- **‘Financial match making’** between project developers and commercial banks, corporate investors, energy equity funds and carbon funds.

- **‘Learning networks’** or **Institutionalized Communities of Practice** to share experiences and knowledge; capacity building resource centres
Thank you