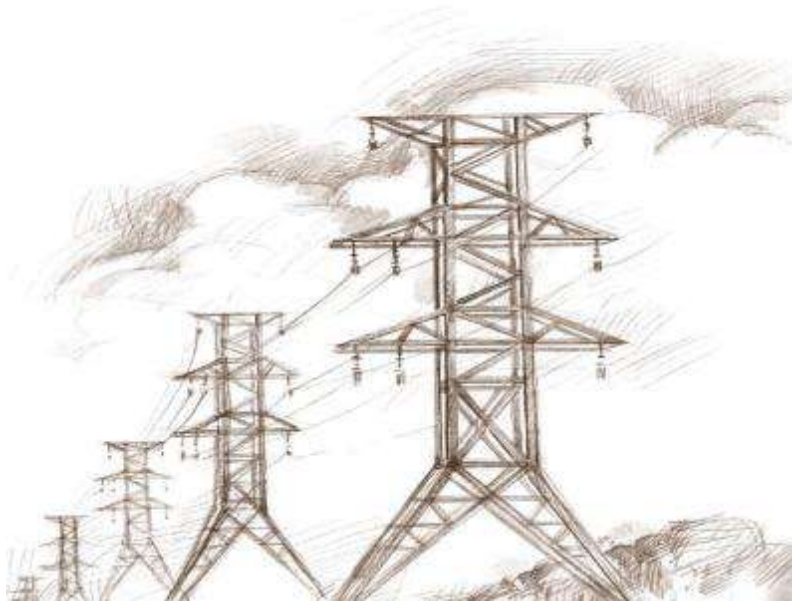


The 8th Japan-SAARC Energy Symposium
**Medium Term Vision For Energy
Connectivity in the SAARC Region**
Islamabad: 9-10 March 2015



Salis Usman
Research Fellow

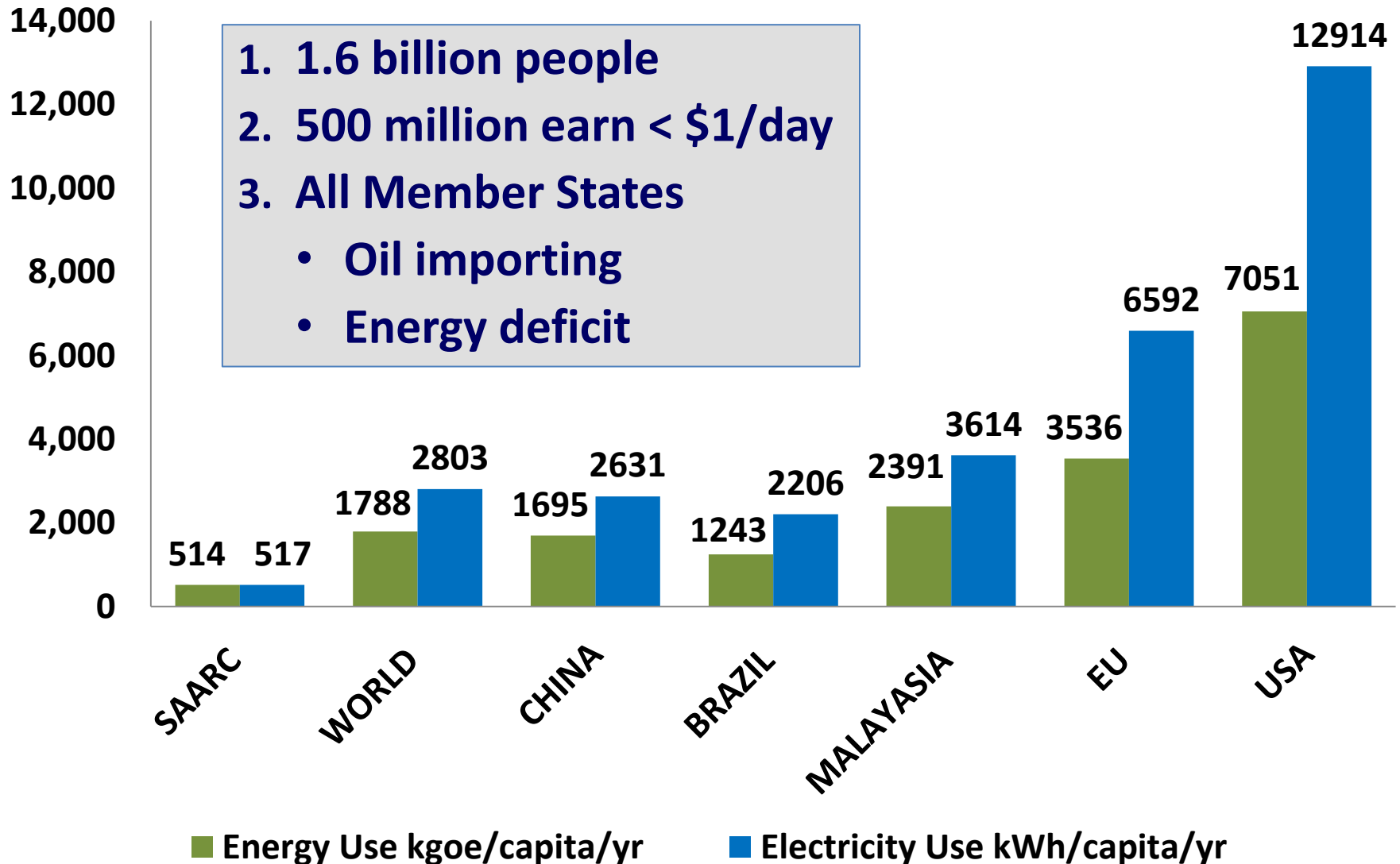
SAARC Energy Centre, Islamabad
www.saarcenergy.org

Presentation Outline



1. Energy Situation of the SAARC Region
2. SAARC Energy Ring
3. SAARC Energy Centre (SEC)
4. Energy Connectivity Interventions by SEC
5. Rationale for Regional Energy Connectivity
6. The Way Forward
7. South Asia Perspective Development Plan
8. Approach for a Prosperous South Asia

1. Energy Situation of the SAARC Region



Strategy

Tackling Energy Issues With Synergy

**THERE'S NO REASON TO LOOK
BACK WHEN YOU HAVE SO MUCH
TO LOOK FORWARD TO.**



Energy Situation of South Asia

Reserves Horizon

Coal

63,036 Million Tonnes, proved recoverable

Natural Gas

2,308 Billion Cubic Meters, proved recoverable

Oil

785 Million Tonnes, proved recoverable

Hydro Power

4,528,000 GWh/year, gross theoretical capability

2. SAARC Energy Ring



1. **SAARC Energy Ring**: Envisioned by the SAARC Leaders at the 2004 Islamabad Summit
2. Vision being translated into reality by SAARC Energy Centre
3. Four Expert Groups engaged to pursue the concept:
 - Oil and Gas
 - Electricity
 - Renewable Energy
 - Technology Transfer (including Coal & Energy Efficiency)

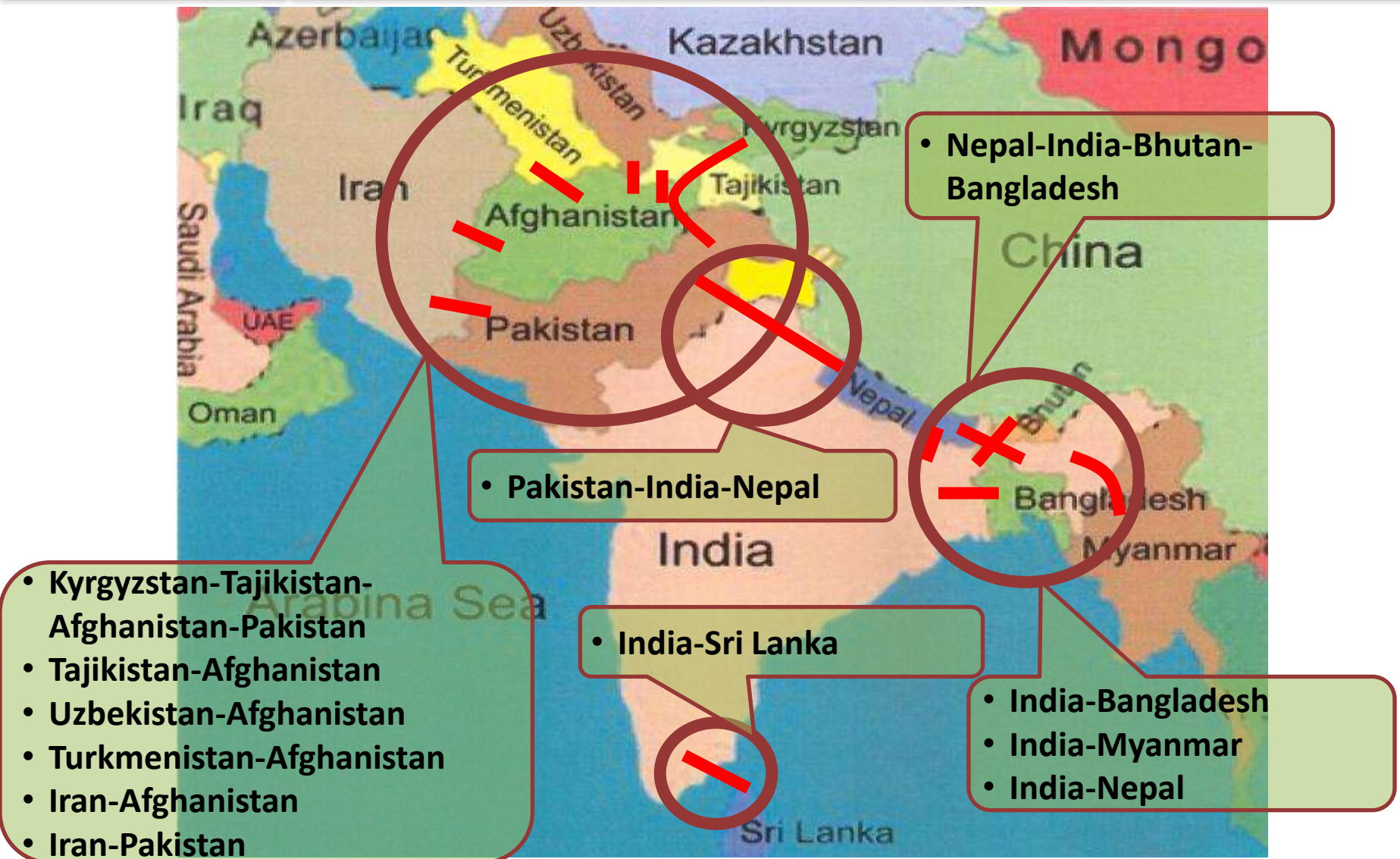
SAARC Vision



Domestic energy development and bilateral cooperation alone will not solve power and energy crisis of South Asia.

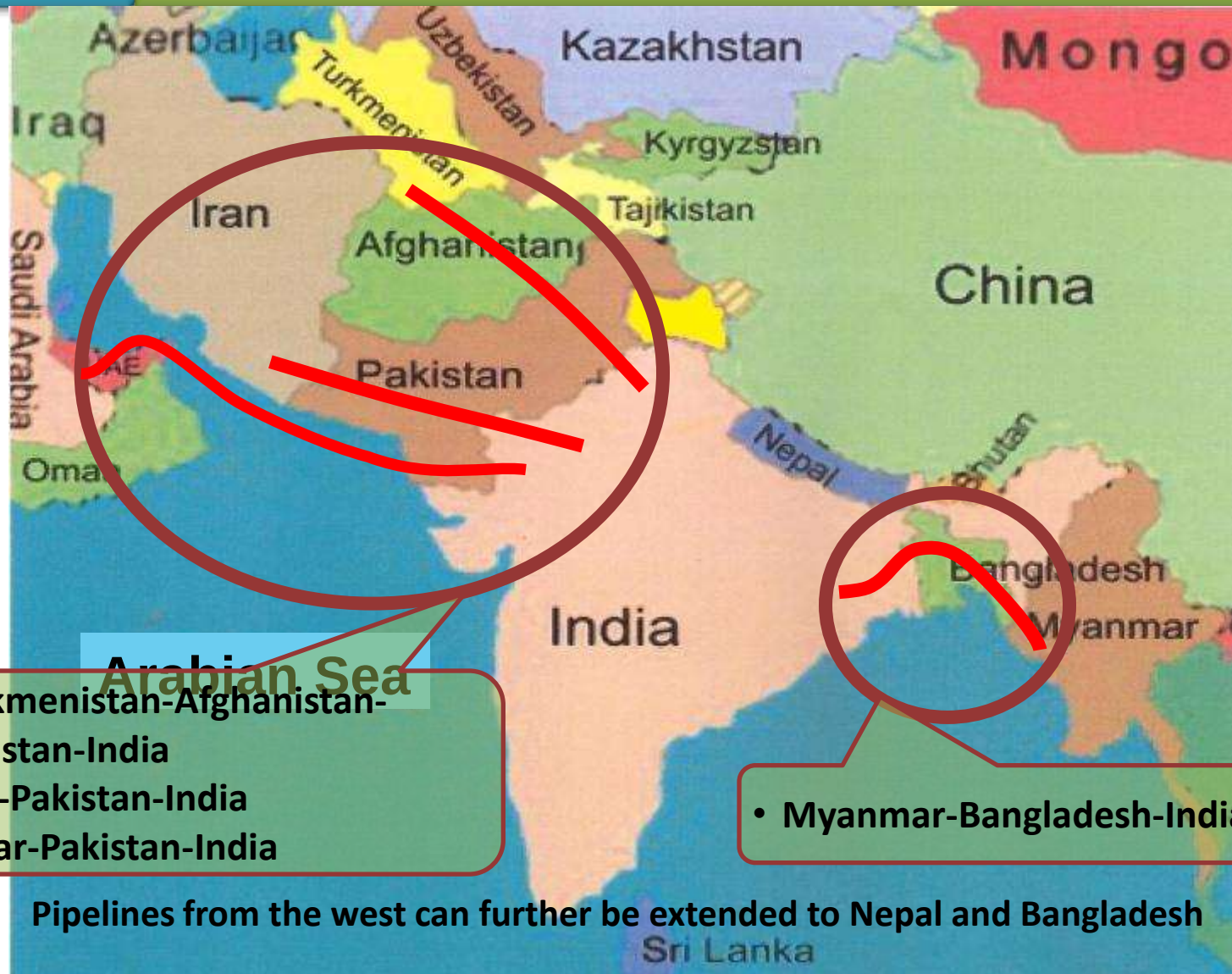
Engagements have to be multi-lateral.

SAARC Energy Ring Power Grid



SAARC Energy Ring

Gas Grid



- Turkmenistan-Afghanistan-Pakistan-India
- Iran-Pakistan-India
- Qatar-Pakistan-India

- Myanmar-Bangladesh-India

Pipelines from the west can further be extended to Nepal and Bangladesh

SAARC Energy Ring

Important Interventions by SEC

1. **SAARC Regional Energy Trade Study (SRETS)** identified four regional or sub-regional trade options:
 - a. Power Market;
 - b. Petroleum Refinery;
 - c. LNG Terminal; and
 - d. Power Plant
2. An ADB funded study on **South Asia Regional Power Exchange** has identified various opportunities in electricity trade.

SAARC Energy Ring

Power Interconnection Opportunities

Grid Interconnection	Capacity (MW)	Est. Cost (Million USD)	Annual Benefit (Million USD)
India-Bhutan	2,100	160	1,840
India-Nepal	1,000	186	105
India-Sri Lanka	500	600	186
India-Bangladesh	500	250	389
India-Pakistan	500	150	491
CASA 1000	1,000	970	906

- Cost estimates depend on time and specific design options.

3. SAARC Energy Centre

Establishment

Year 2006 at Islamabad, Pakistan

Objective

Initiate, promote and facilitate cooperation in energy sector of SAARC Member States for the benefit of all

Funding

SAARC Member States; supervised by a Governing Board comprising all Member States

Technical Resources

Professional staff selected from SAARC Member States
Expert services through outsourcing

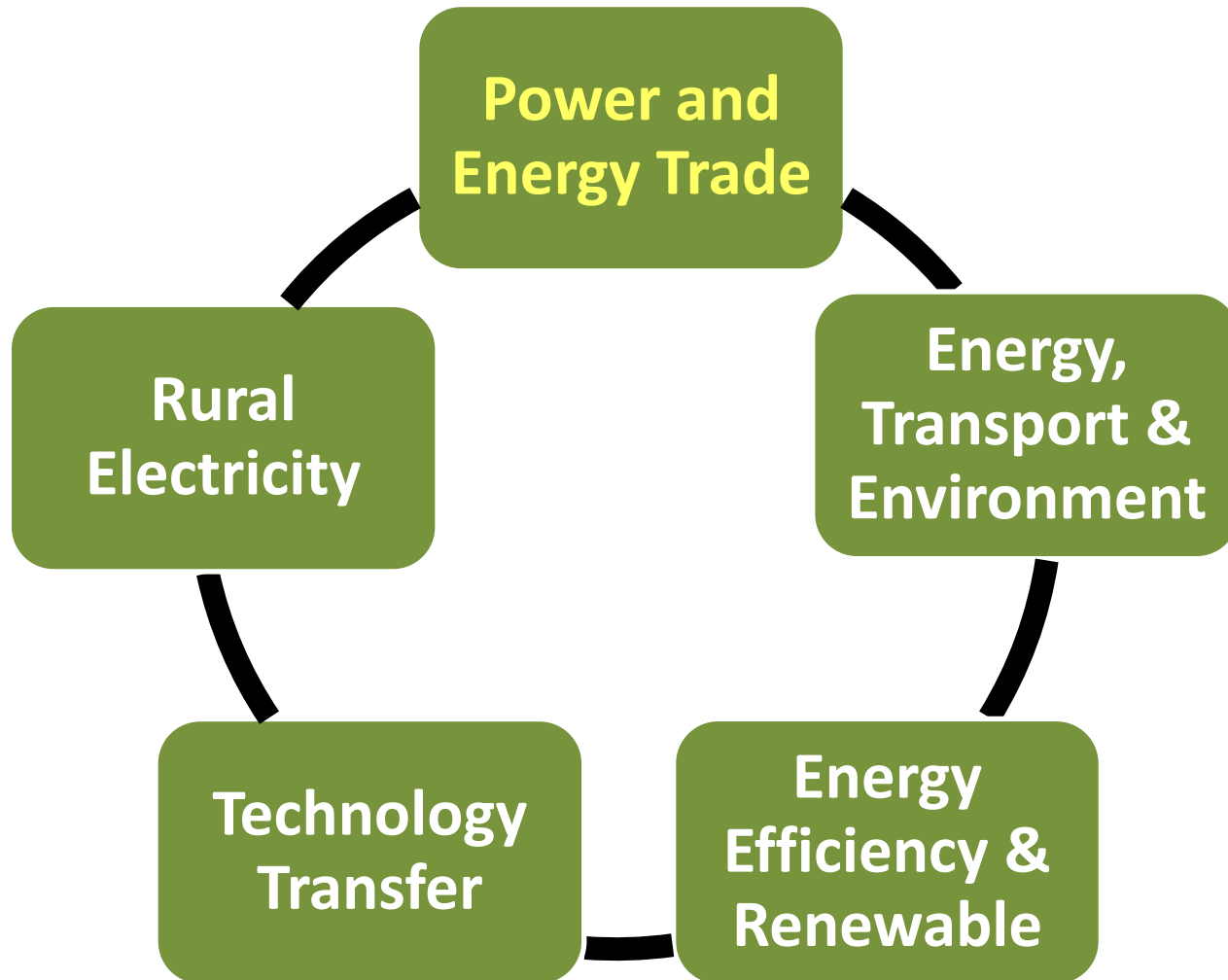
Networking

ADB, WB, Japan, UNESCAP, ASEAN, US, Germany

Principles of Programme Directions



Thematic Areas of Programme Activities



Programme Activities



1. Research Studies;
2. Capacity Building through Training Workshops, Seminars and Webinars;
3. Pilot Projects; and
4. Special Projects

4. SEC Program Activities – 2013

Energy Connectivity



1. *Pre-feasibility Study*: Setting up SAARC Regional/ Sub-regional Coal Based Power Plant
2. *Study*: Pricing Mechanisms of Electricity in SAARC Member States
3. SAARC Energy Data Book (2001-2010)
4. *Workshop*: Review of Electricity Laws and Regulatory Frameworks of Member States
5. *Seminar*: Role of Private Sector in Regional Power Trade

SEC Program Activities – 2014

Energy Connectivity



1. *Study:* Designing Management & Monitoring Framework for Regulatory Compliance by Power Transmission Utilities of the SAARC Region
2. *Study:* Development of a Potential Regional Hydro Power Plant
3. SAARC Energy Data Bank (2001-2011)
4. *Workshop:* Experience Sharing of Construction, Operation and Maintenance of LNG Facilities

SEC Program Activities – 2014

Energy Connectivity.....Continued



5. *Workshop:* Harmonizing Regulations & Policies for Cross Border Power Trade, Risk Sharing & Financial Settlement
6. *Webinar:* Concept, Establishment & Operation of a Power Exchange for Regional Power Trading
7. *Workshop:* Cogeneration Opportunities in Sugar and Paper Industries in SAARC Member States
8. *Workshop:* Power System Studies for Synchronization of Multiple Systems

SEC Program Activities – 2015

Energy Connectivity



1. *Feasibility Study: Setting-Up SAARC Regional/Sub-regional LNG Terminals*
2. SAARC Energy Data Bank (2001-2012)
3. *Study: 20-Year Perspective Plan for SAARC Power Sector*
4. *Study: Assessment of Renewable Energy Development in South Asia; Achievements and the Way Forward*
5. *Study: Harmonizing Transmission Grid Codes of Member States to Combat Regulatory Challenges for Intra-region Power Interconnections*

SEC Program Activities – 2015

Energy Connectivity.....Continued



6. *Workshop:* Management and Monitoring Framework for Regulatory Compliance by Transmission Utilities
7. ***Workshop: Development of a Potential Regional Hydro Power Plant in South Asia***
8. *Workshop:* Experience Sharing on Coal Bed Methane, Underground Coal Gasification
9. ***Workshop: Past, Present and Future of High Voltage DC (HVDC) Power Transmission***
10. ***Pilot Project: Certificate Course 'Power System Planning and Analysis' Through Distance Learning***

5. Rationale for Energy Connectivity

Electricity



1. **Afghanistan** has extremely poor access to electricity.
2. **Bangladesh** is reliant on gas ; rapidly drawing down its gas reserves and yet facing serious power shortages.
3. **Pakistan** is facing power shortages between 4,000 to 6,000 MW at peak demand. Hydro is seasonal, natural gas production is stagnant and oil is expensive.
4. **Sri Lankan** power demand has exceeded the capacity of its viable major hydropower development options. It has embarked on imported coal based thermal power.
5. **India** has a serious balancing act to play between growth, reliable power supply and emissions. Primary fuel supply is already posing great challenges.

Rationale for Energy Connectivity

Electricity.....Continued

6. **Nepal** and **Bhutan** have high quality (long term) hydropower potential and very little local demand.
7. Success of power exchanges in **India** has made a case for maximizing the potential for regional power transfers.
8. Transmission capability within **India** has improved remarkably over the last decade.
9. **In-direct benefits**
 - Development of inter-connections would encourage transmission investments in other regions e.g. Central Asia that would benefit Afghanistan.
 - Large scale deployment of RE technologies would bring down their costs making case for further investments.

Regional Energy Connectivity

Historic Milestone



SAARC Inter-Governmental Framework Agreement (IGFA) for Regional Cooperation in Energy (Electricity) signed in November last year (2014):

- Unrestricted cross-border trade
- Commercial negotiation of Power Purchase Agreements
- Non-discriminatory open access
- Private sector trading
- Participation in power exchanges

SAARC Market for Electricity to be ultimately integrated with CASA Regional Electricity Market (CASAREM) for opening new horizons of peace and prosperity in Asia.

6. Regional Energy Connectivity

The Way Forward



1. Detailed Scenario Analysis on Regional Interconnections
2. SAARC Power Transmission Master Plan
3. Perspective Development Plan for the Power Sector of South Asia

7. SAARC Perspective Development Plan

Could be a Japan-SAARC Joint Effort



1. Demand and supply profiles of all the Member States
2. Complete supply chain from generation to transmission & distribution along with supply-demand scenarios together with investment requirements
3. Execution plan in totality; phase wise implementation scheme

SEC proposes JICA to join hands for undertaking this strategic intervention which would be a huge step towards achieving objective of energy connectivity in South Asia.

3C Approach for a Prosperous South Asia

- **Coordination;**
- **Coherence; and**
- **Commitment**





Thanks For Your Attention

Supporting Slide

Impact of SEC's Initiatives



SEC is engaged in mitigating Energy Poverty through **creation of SAARC Market for Electricity** and **multilateral energy cooperation** within and across SAARC for a better tomorrow.

- Concept of SAARC Energy Ring has found acceptance at technical, policy and political levels
- Regional energy cooperation acknowledged as a “**business opportunity**” by private sector
- Improved flow of information and experiences across the SAARC Member States
- Development of cross-border power interconnections; Initiation of energy trading among SAARC Member States