

Third Meeting of Expert Working Group on Energy Connectivity

Energy Connectivity in South & South- West Asia (S-SWA)

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South-South West Asia Region (S-SWA): Content of Presentation

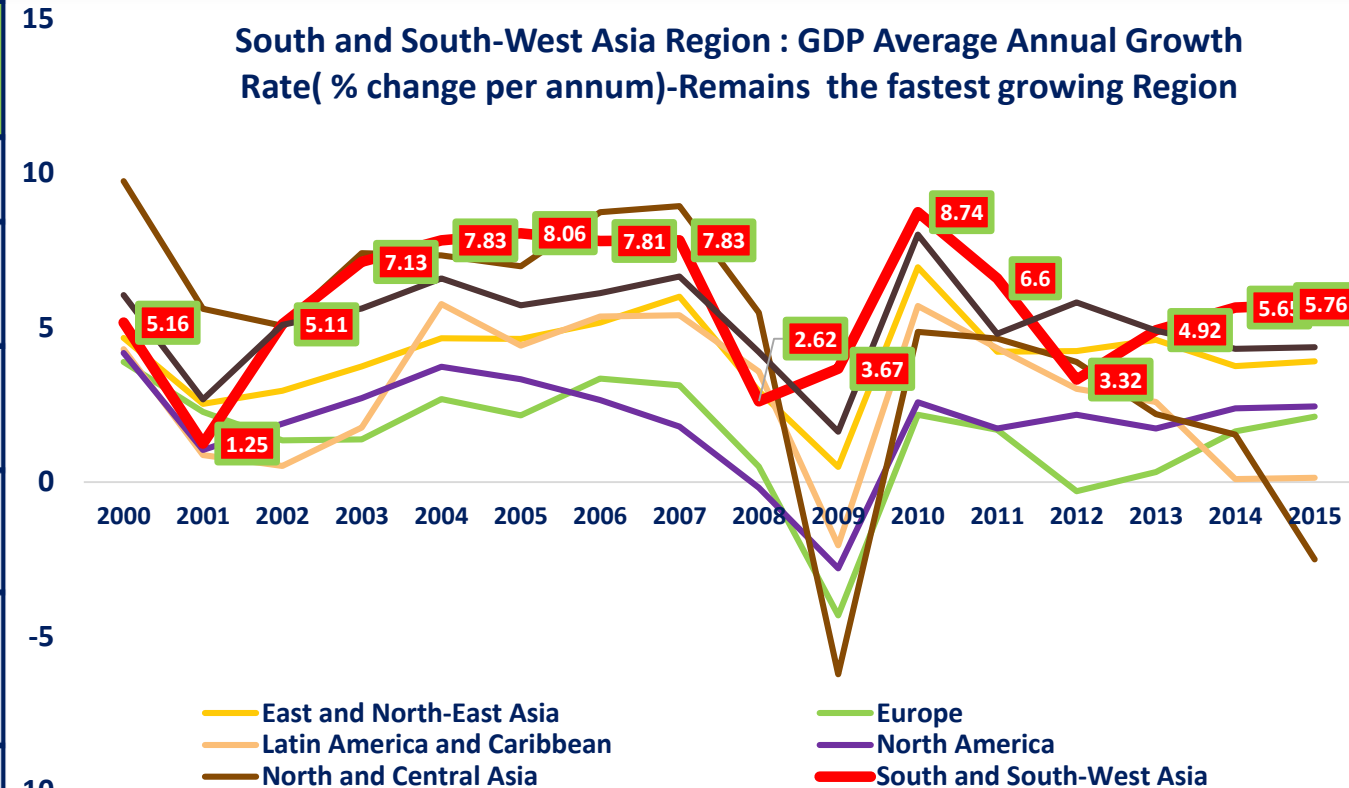
- ***Socio-Economic Profile***
- ***Energy and Power Scenario***
- ***Status of Cross Border connectivity***
- ***Key Drivers for power connectivity***
- ***Potential benefits of power connectivity for sustainable development***
- ***Institutional Structure***
- ***Risk and Challenges to Regional Energy Connectivity***
- ***Potential Mitigation Measures.***
- ***Way Forward***

S-SWA : Socio-Economic Profile

S-SWA: Socio-Economic Profile

	Year -2015					
Indicators	East and North-East Asia	North and Central Asia	South and South-West Asia	South-East Asia	Asia and the Pacific	World
Population Size Thousands	1,611,660	229,079	1,901,580	634,610	4,416,460	7,383,010
Population % change per annum % change per annum	0.4	0.6	1.3	1.1	0.9	1.1
GDP in Constant Prices Million 2010 US dollars	16,433,800	2,014,770	4,351,910	2,524,240	27,020,500	75,131,104
GDP Per Capita 2010 US dollars per capita	10,197	8,795	2,289	3,978	6,119	10,282
GDP Average Annual Growth Rate % change per annum	3.9	-2.5	5.8	4.4	3.7	2.6
Urbanization Rate % of population	60	65	36.1	47.2	48.0	54

Source: Asia Pacific Energy Portal

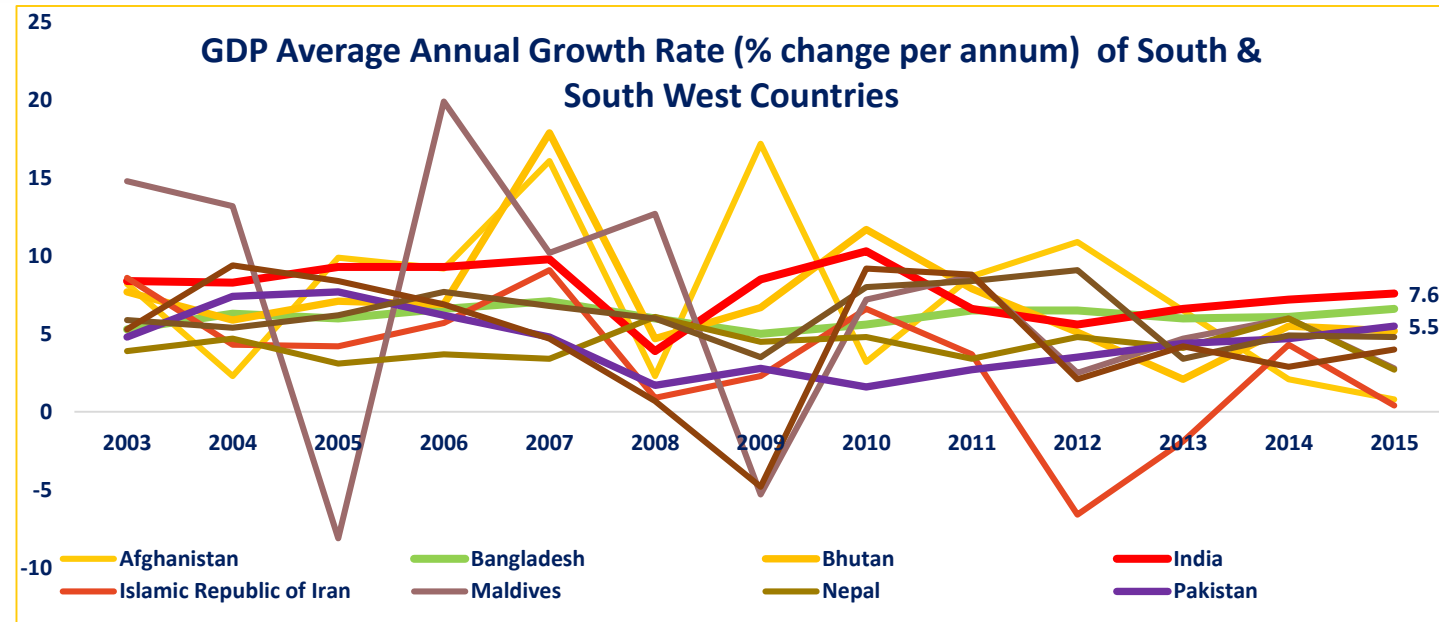


Source: Asia Pacific Energy Portal

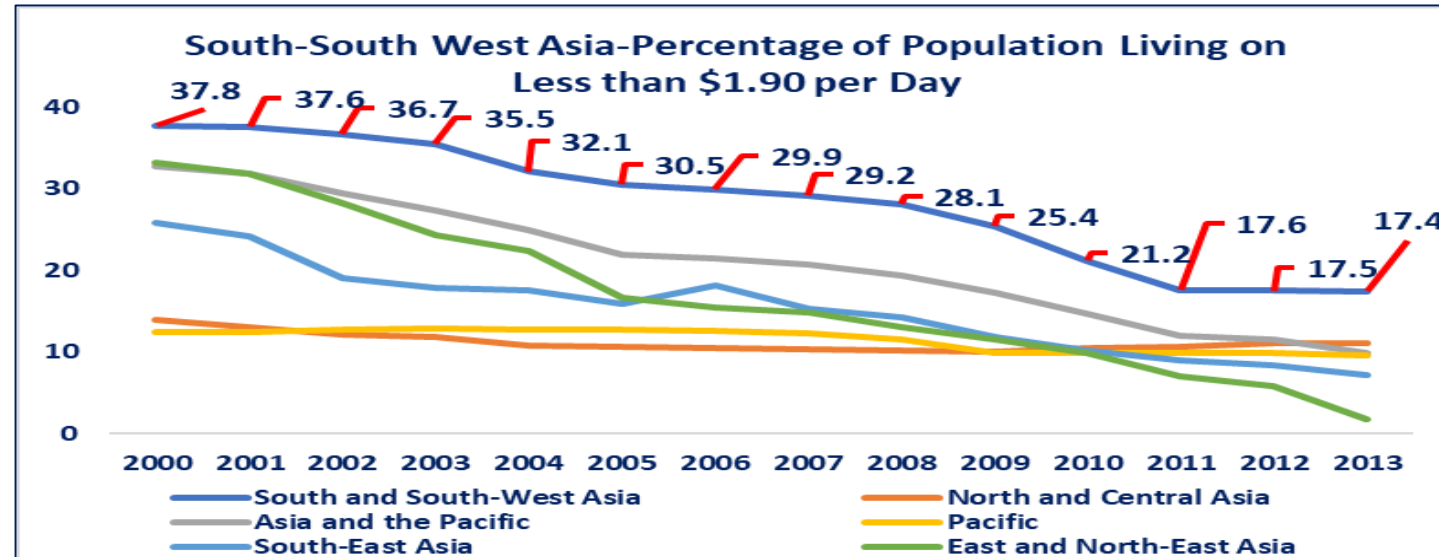
- ✓ **S-SWA is home to 1.9 billion people (25 % of world's population and around 43 % of the population of Asia and Pacific as of 2015). Population percentage change per annum is declining trend as in 2000 it was 1.8% and in 2015 it was 1.3%.**
- ✓ **Average Annual GDP growth rate increased to 5.8 % in 2015, compared to 2.79% in 1999. During 2008 financial crisis, GDP growth rate fell but the impact was lowest among others regions.**
- ✓ **Per capita GDP 2289 US\$/Capita is the lowest among the Sub Region.**

S-SWA: Socio-Economic Profile

- ✓ The economic growth in South Asia in the year 2015 was led by India (7.6%), Bangladesh (6.6%), Pakistan (5.5 %), Bhutan (5.2 %) and Sri Lanka (4.8 %)
- ✓ On the South west Asia, Turkey recorded 4 % growth , Iran recorded 0.4% growth.
- ✓ Out of 804.2 Million poor people of the world who lives less than US\$ 1.90 per day in 2013, 274.9 Million of poor people lives in S-SWA region i.e. 34 % of world's poor. South Asia alone have 274.5 Million Poor person.



Source: Asia Pacific Energy Portal



Source: Asia Pacific Energy Portal

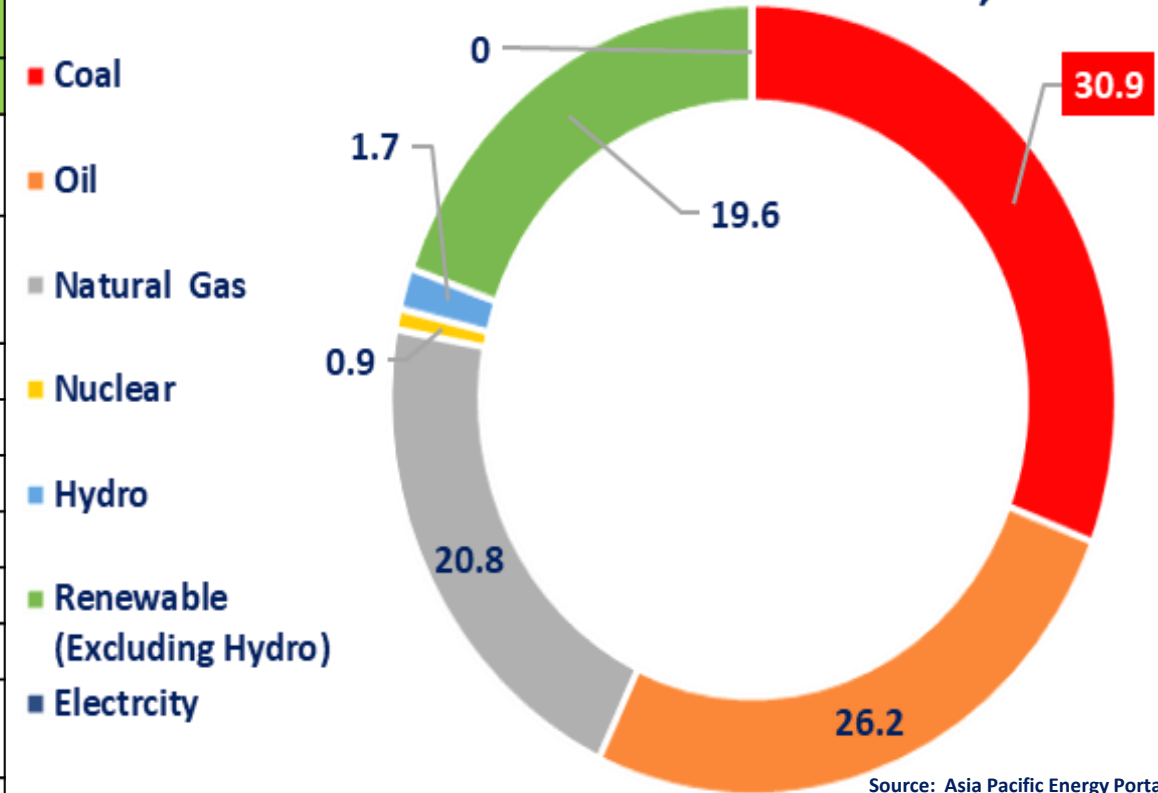
S-SWA : Energy and Power Scenario

S-SWA: Primary Energy Supply Scenario

Primary Energy Supply (Year-2000-2015)												
Indicators	East & North-East Asia		North and Central Asia		South & South-West Asia		South-East Asia		Asia and the Pacific		World	
	2000	2015	2000	2015	2000	2015	2000	2015	2000	2015	2000	2015
Total Primary Energy Supply Million tons of oil equivalent	1872	3,702	741	887	783	1,371	383	628	3854	6734	10028	13647
Total Primary Energy Supply per Capita, Kg of oil equivalent per capita	126	2297	3403	3871	487	721	730	989	1020	1525	1632	1848
Coal % of TPES	44.1	59	19.1	17.4	23.3	30.9	8.3	18.2	31.6	43.5	23	28.1
Oil % of TPES	31.1	22.3	20.7	21.4	32.9	26.2	39.5	33.8	30.3	24.3	29.2	34.6
Natural Gas % of TPES	5.7	8.1	52.1	52.3	15.2	20.8	19.3	22.3	18.2	18.2	20.7	21.6
Nuclear % of TPES	6.23	2.4	4.71	5.9	0.67	0.9	0	0.0	4.06	2.3	6.74	4.9
Hydro % of TPES	1.48	2.8	2.47	2.2	1.54	1.7	1.03	1.5	1.68	2.4	2.25	2.5
Renewables (excl. Hydro) % of TPES	11.3	5.0	1.0	1.0	27.1	19.6	31.1	24.0	14.2	9.3	10.8	11.2
Electricity % of TPES	0.004	0.0	-	-0.2	0.048	0.0	0.062	0.2	-	0.0	0.009	0.0
			0.136						0.009			

Source: Asia Pacific Energy Portal downloaded from <http://www.asiapacificenergy.org>.

Primary Energy Supply by Product in South and South-West Asia, 2015



- ✓ Total Primary energy Supply (TPES) of the S-SWA region has increased to 1371 million tons of oil equivalent in 2015 as compared to 783 Million Tons of Oil equivalent in 2000, 75% increase in total primary energy supply in 15 years period.
- ✓ S-SWA has recorded lowest TPES per Capita of 721 Kg of oil equivalent among all other sub-region of Asia and the Pacific in the year 2015.
- ✓ Coal, Oil, Natural Gas, Renewable (Excluding Hydro) contributes 30.9%, 26.2%, 20.8 % and 19.6 % respectively in the TPES.

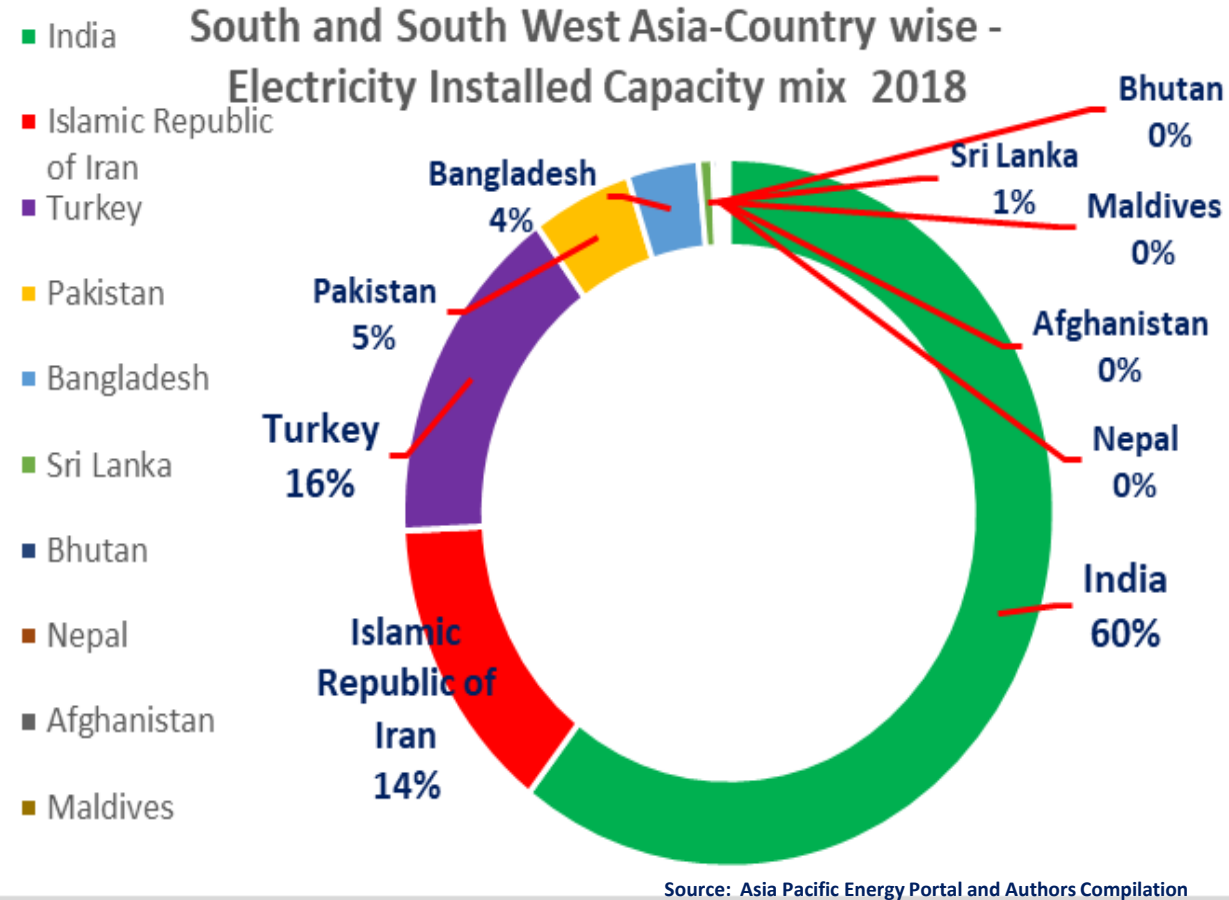
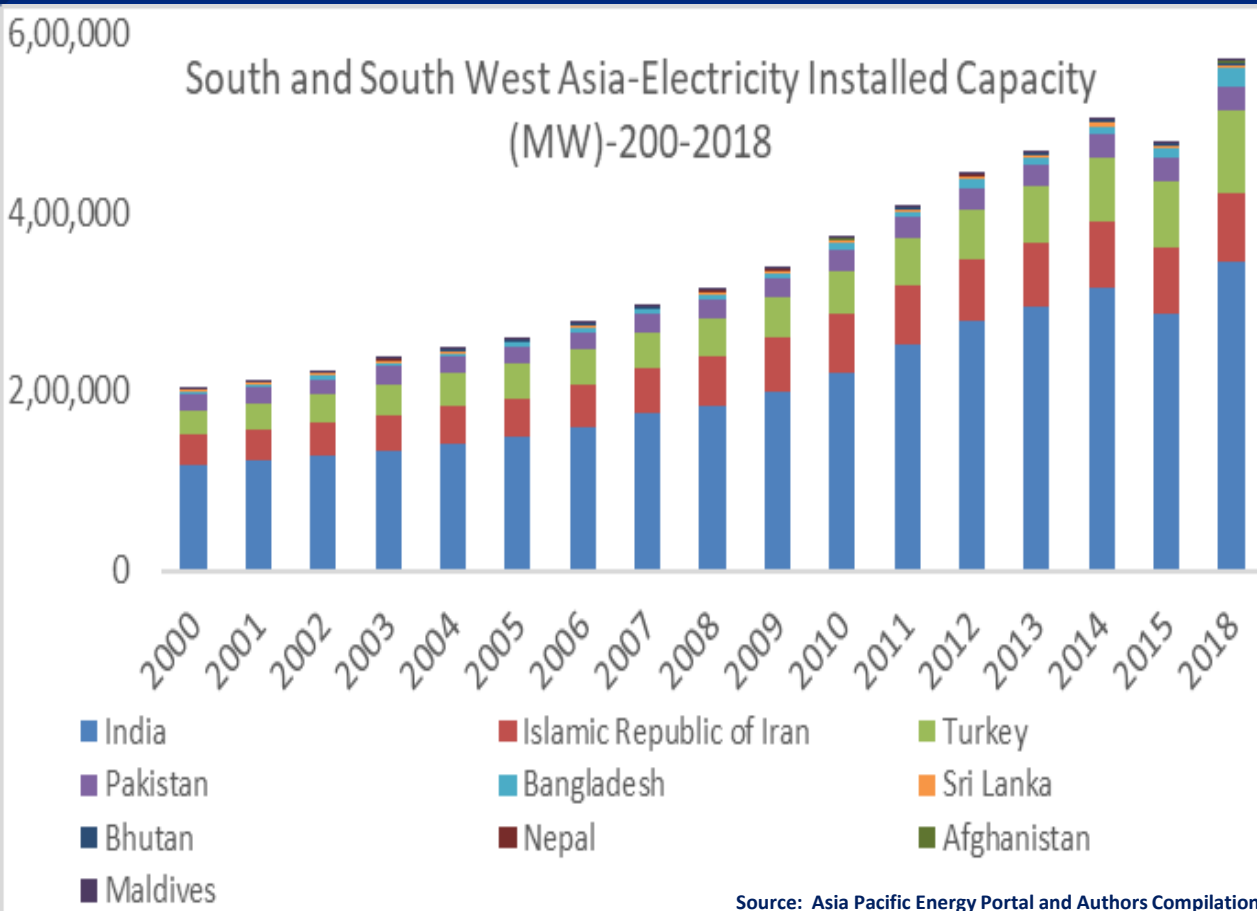
S-SWA: Country Wise -Fuel Scenario

	Fuel Wise (%) TPES (Country Wise) in South and South-West Asia, 2000-2015													
	Coal		Oil		Natural Gas		Nuclear		Hydro		Renewable (Excluding Hydro)		Electricity	
	2000	2015	2000	2015	2000	2015	2000	2015	2000	2015	2000	2015	2000	2015
Afghanistan	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bangladesh	1.8	6	17.5	13.1	38.6	56.1	0	0	0.35	0.13	41.7	24.7	0	0
Bhutan	NA	NA	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA
India	33.1	44.5	25.4	24.2	5.2	5.1	1	1.15	1.45	1.39	33.8	23.6	0.03	0
Iran (Islamic Republic of)	1.2	0.5	55.7	32.9	42.8	65.6	0	0.32	0.26	0.51	0.1	0.2	-0.047	
Maldives	NA	NA	NA	NA	NA	NA	0	0		NA	NA	NA	NA	-0.1
Nepal	3.2	4.8	8.8	9.9	0	0	0	0	1.73	2.57	86.2	81.5	0.11	1.29
Pakistan	2.9	5.3	29.9	26.7	26.2	28.2	0.82	1.69	2.33	3.11	37.8	35	0	0.04
Sri Lanka	0	12	43	41	0	0	0	0	3.3	4.49	53.7	42.5	0	0
Turkey	29.6	26.8	40	30.1	16.6	30.6	0	0	3.5	4.48	9.8	7.8	0.38	0.263

	Final Energy Consumption (2000-2015) and Key Sector Wise											
	East and North-East Asia		North and Central Asia		South and South-West Asia		South-East Asia		Asia and the Pacific		World	
	2000	2015	2000	2015	2000	2015	2000	2015	2000	2015	2000	2015
Total Final Energy Consumption Million tons of oil equivalent	1264	2,390	494	563	550	974	273	442	2669	4,465	6993	9,325
Industry Percentage of Total Final Consumption- % of total final consumption	35.7	46.2	27.9	27.5	24.9	30.0	27.8	28.6	31.5	38.2	26.7	29.1
Transport Percentage of Total Final Consumption % of total final consumption	16.0	17.0	17.2	19.9	14.6	18.3	22.5	26.7	17.2	19.1	28	29.0
Residential Percentage of Total Final Consumption % of total final consumption	27.2	15.8	32.3	24.9	42.7	33.6	34.7	26.5	31.7	21.8	25.4	21.5

- ✓ India coal share increased from 31.1% (2000) to 44.5% (2015) highest, followed by Turkey. Iran natural gas share increased from 42.8%(2000) to 65.6%(2015).
- ✓ Major economies like India, Iran and turkey collectively contributes to largest share of 87.2 % in the TPES for the year 2015.
- ✓ India alone contributes a lion share of 62.1 % followed by Iran 17.2 % in TPES of S-SWA region.
- ✓ S-SWA TFEC (974 million tons oil equivalent) 2nd highest among other sub-regions.
- ✓ Residential sector contributes 33%, Industry 30% and Transport 18.3% of TFEC.

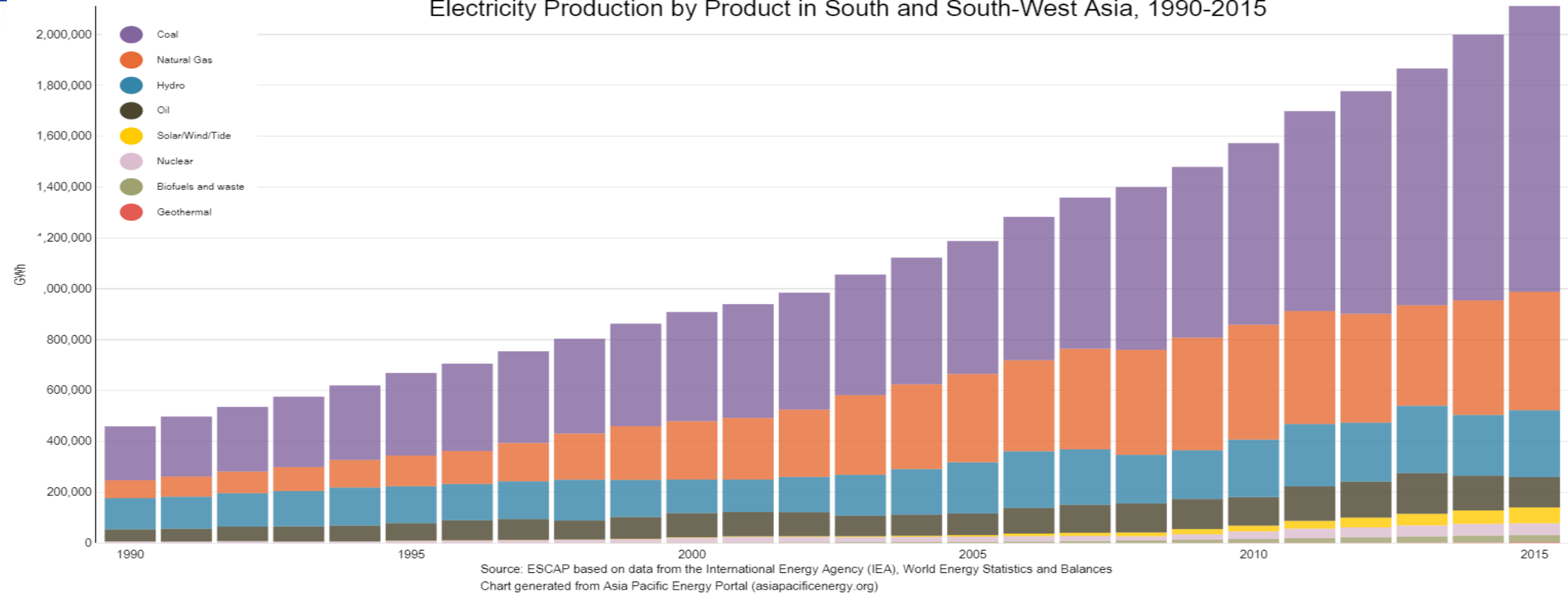
S-SWA: Electricity Installed Capacity



- ✓ Electricity Installed Capacity (EIC) increased from 2,03,089 MW in year 2000 to 5,69,737 MW in 2018, an increase of 180 % .
- ✓ East and North east Asia(2015) has highest EIC of 2108 GW followed by S-SWA of 570 GW.
- ✓ Major economies India, Iran, turkey collectively contributes to 90 % of the total installed capacity.
- ✓ India alone contributes 60 % of total installed capacity followed by turkey 16 % and Iran 14%

S-SWA: Power supply (including generation mix)

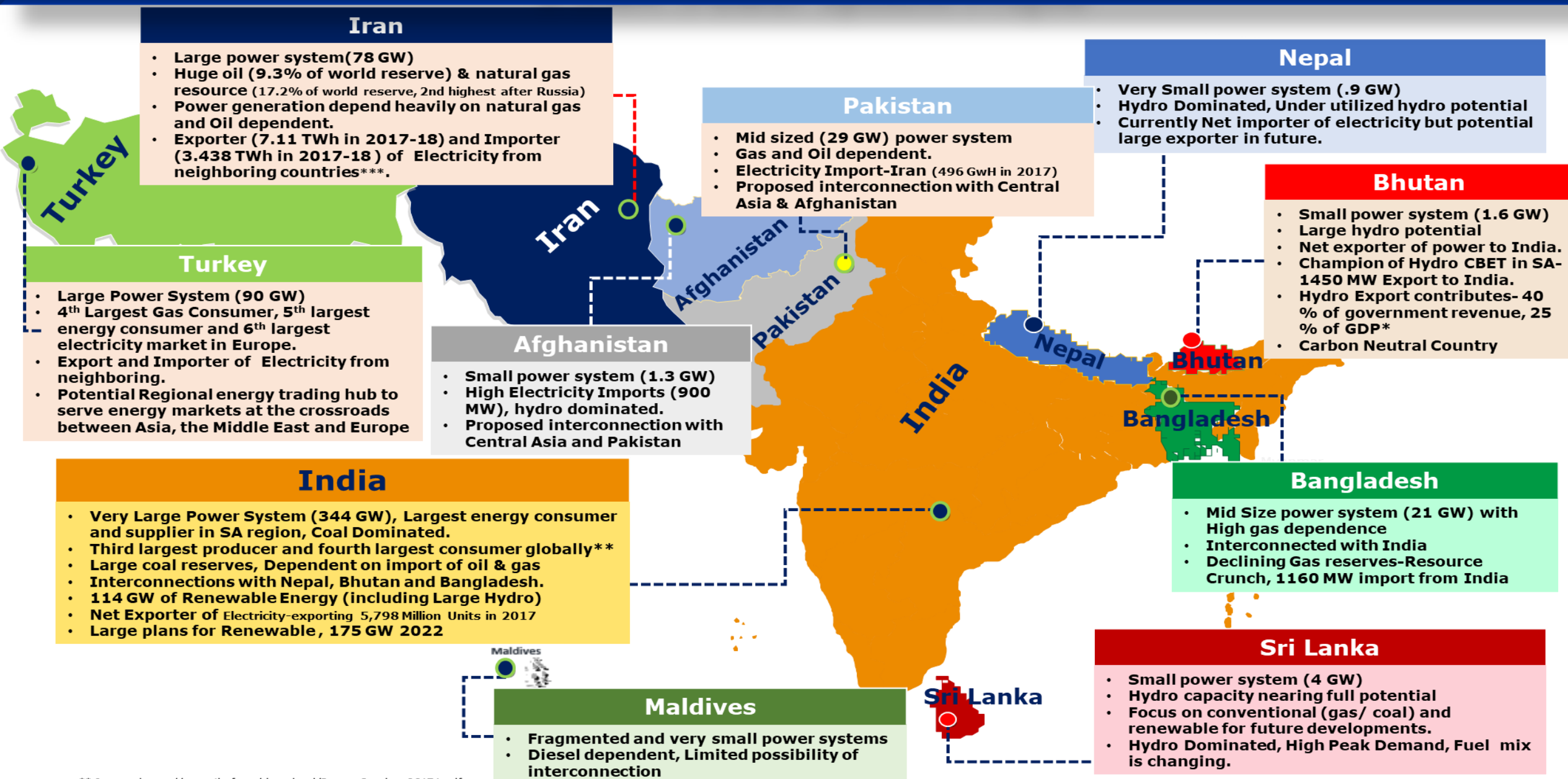
Electricity Production by Product in South and South-West Asia, 1990-2015



- ✓ Coal dominates the electricity production 53.2% in 2015, followed by natural gas, hydro and oil at 22.1%, 12.5 % and 5.6 % respectively.
- ✓ Coal, Natural Gas share in electricity production has increased by 161%, 102% respectively from 2000 level.
- ✓ Solar/Wind/Tide/Geothermal and Biofuels and waste collectively contributes to only 4.4 % total electricity produced.
- ✓ Major challenge is in decarbonizing the electricity sector for sustainability.

S-SWA : Status of Cross Border Connectivity

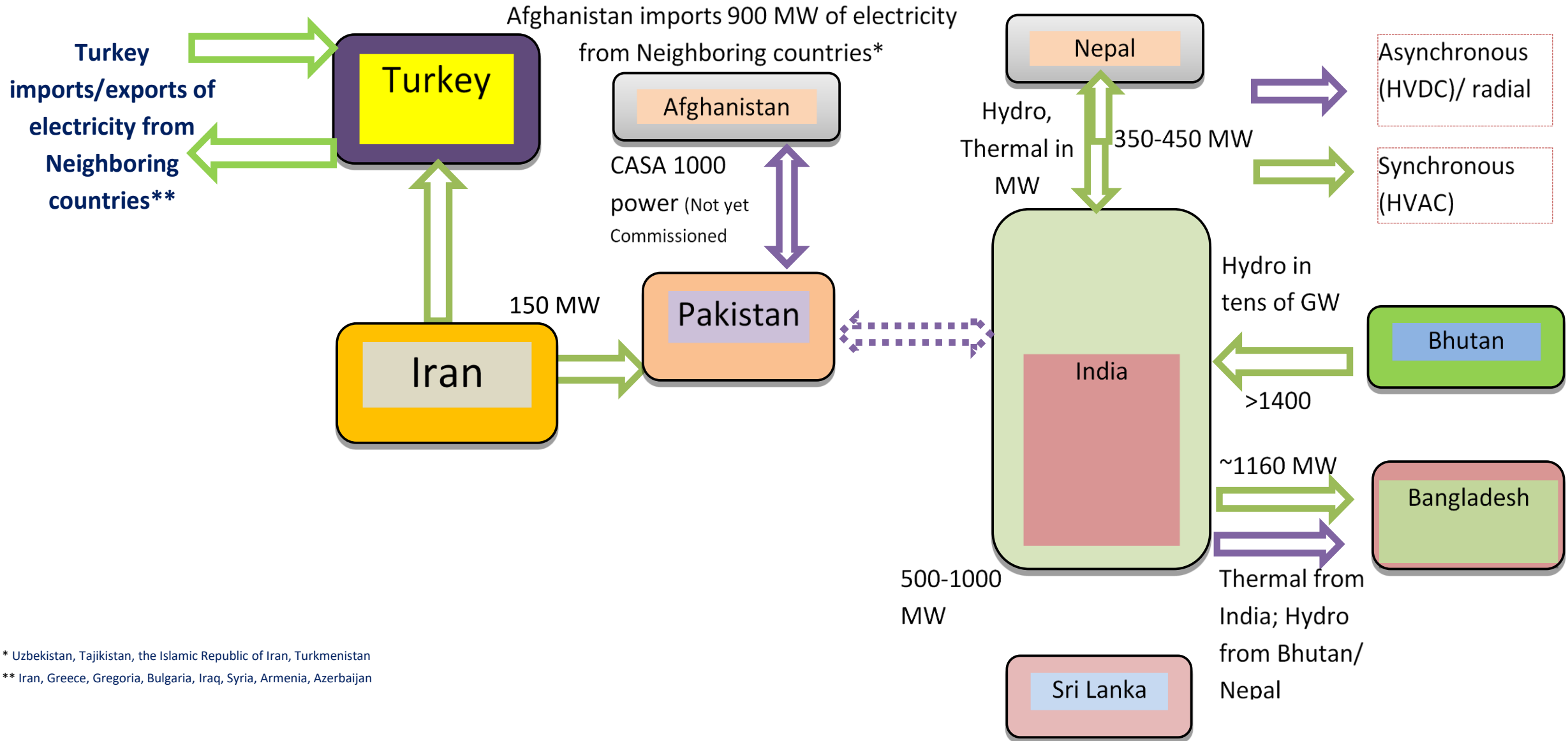
S-SWA :Power System Profile



** Source- <https://www.ibef.org/download/Power-October-20171.pdf>

***<https://www.azernews.az/region/127591.html>* and hydropower infrastructure development contributes another 25 percent of GDP through the construction sector. Source- <http://www.worldbank.org/content/dam/Worldbank/document/SAR/bhutan-country-snapshot-spring-2014.pdf>
CBET-Cross Border Electricity Trade

S-SWA : Current Scenario of Cross Border Electricity Trade



S-SWA : Key Drivers for power connectivity

S-SWA : Key Drivers for Cross Border power connectivity

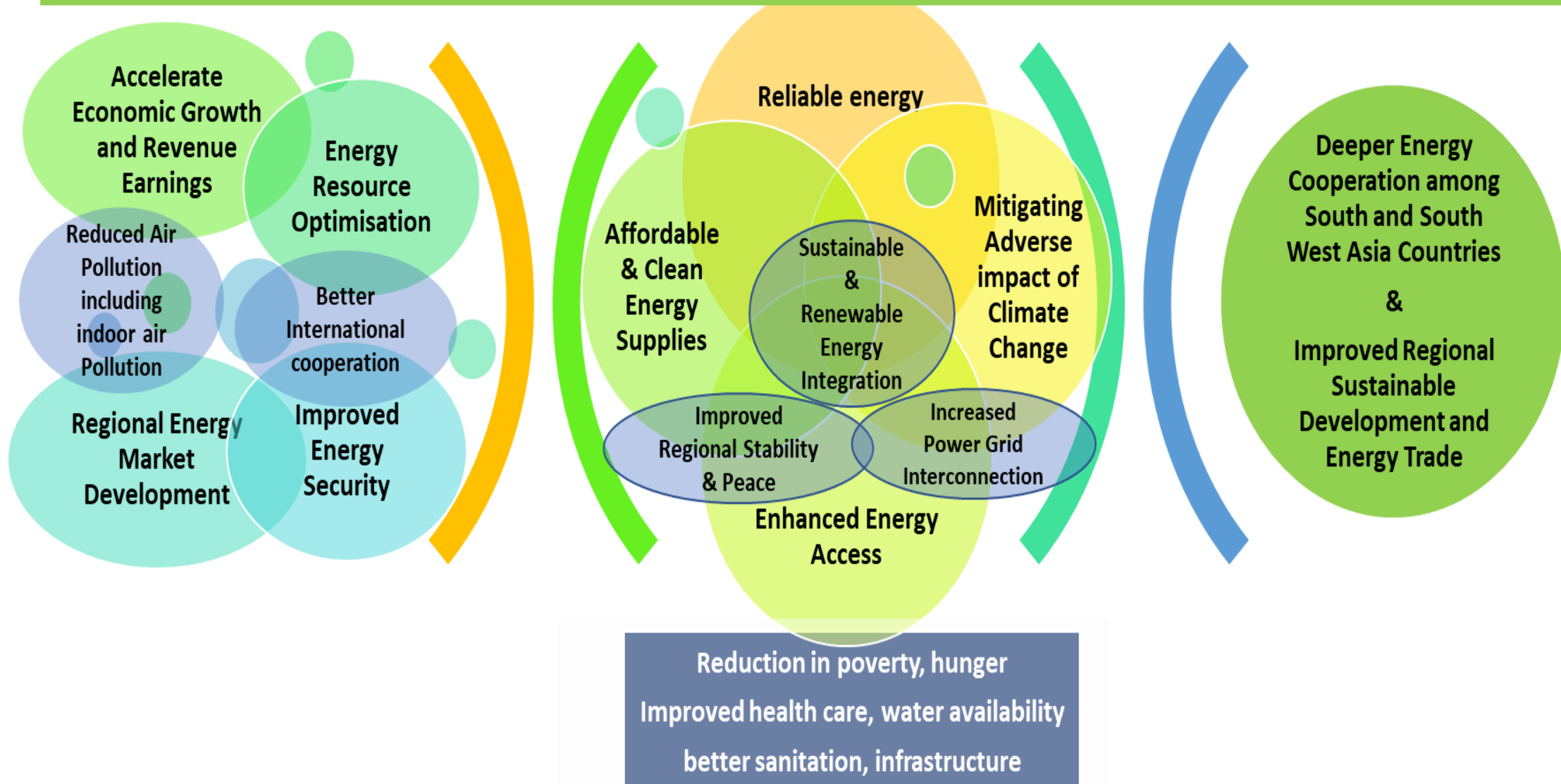
- ✓ Addressing Energy/Electricity shortages for sustaining economic growth***
- ✓ Harnessing the Power System diversity and Complementarity***
- ✓ Regional Energy Resource development through CBET and Optimization in generation capacity addition/investment.***
- ✓ Enhancing Energy Access through CBET.***
- ✓ Enhanced Access to Clean Energy Resource and Renewable Energy Grid Integration through CBET***

S-SWA: Enhanced Access to Clean Energy Resource and Renewable Energy Grid Integration through CBET

- ✓ BBIN sub region, blessed with huge Hydro Power Potential. Tapped so far 14% approx. Most of these hydropower potentials will largely remain un-exploited without accelerating CBET, as domestic demand is limited such as Bhutan and Nepal.
- ✓ The wind energy potential across Afghanistan, Bhutan, India, Iran, Nepal, Pakistan, Sri Lanka and turkey is about 411 GW.
- ✓ South Asia has huge Renewable Energy Potential, India plan to have 175 GW of renewable Energy by 2022. (India's Present installed capacity of RE is 80 GW approx., excluding large Hydro 45 GW)
- ✓ To address intermittency of solar & wind energy resources and balancing of the grid, cross border development of hydro power and Natural gas can provide quick balancing support to the regional grid.
- ✓ In this context, hydro power potential in BBIN region and Natural gas of Iran provides a prefect case for accelerating Cross Border Energy/Electricity Trade and helping in Renewable Energy Grid Integration.

S-SWA: Potential benefits of power connectivity for sustainable development

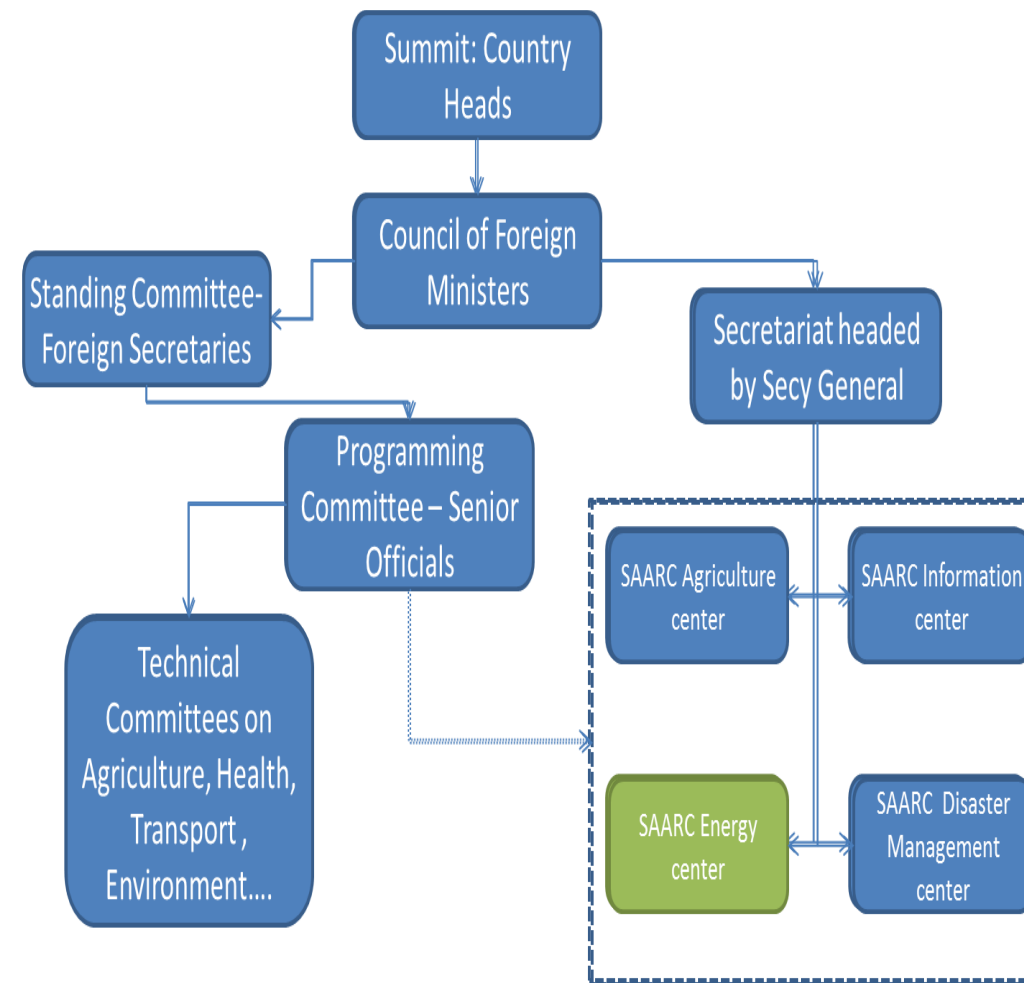
Cross Border Electricity Trade and Regional Sustainable Development



S-SWA: Institutional Structure

S-SWA: South Asian Association for Regional Cooperation (SAARC)

- Formed in 1985, eight countries, platform to work together in a spirit of friendship, trust and understanding for the welfare of the people to promote economic, social etc.
- Process of regional cooperation in energy sector began with formation of Technical committee on energy in the year 2000 to promote :
 - Development of energy resources, including hydropower and energy trade in the region
 - To develop renewable and alternative energy resources
 - Promote energy efficiency and conservation in the region
- SAARC inter-governmental framework agreement for energy cooperation (electricity) signed in November 2014.
- SAARC Comprises of Council of Ministers, Standing committee of foreign secretaries, Program Committee and Technical Committee.
- SAARC Secretariat is in Nepal whereas SAARC energy centre is in Islamabad, Pakistan



BIMSTEC : Regional Groupings – South Asia and South East Asia



Source : SARI/EI BIMSTEC Energy Outlook report

Organizational Structure- Roles and functions

- Ministerial Meeting: Cover the area of foreign affairs and the area of trade and economic affairs
- Senior Officials' Meeting: Divided into the areas of trade and economic affairs and foreign affairs.
- BIMSTEC Working Group : Reports to the Senior Officials meeting
- Expert Group : Lead countries of priority sectors of cooperation hosts the meeting

Operational aspects

- Annual Ministerial Meetings
- SOMs, Other Working

1st Energy Ministers conference

- Draft MOU for Trans-power exchange and grid interconnection, hydropower development, energy security of the region
- BIMSTEC Energy centre proposed in Bengaluru

5th Taskforce meeting

- MOU draft finalised among member countries in March 2015
- Agreement similar to SAARC Framework Agreement for Energy Cooperation signed recently

S-SWA: Risk & Challenges to Regional Energy Connectivity

S-SWA: Risk & Challenges to Regional Energy Connectivity

- ✓ Lack of trust, Political uncertainty
weak Bilateral Relationship,
- ✓ Policy, Regulatory & Legal
- ✓ Financial/Investment Challenges
- ✓ Cross Border Power Project
Implementation challenges
 - ✓ Land Acquisition
 - ✓ Environment, Forest
Clearance and
rehabilitation and
resettlement challenge
- ✓ Commercial risks/challenges
 - ✓ Off take Risk/Challenge
 - ✓ Currency Risk and
challenges
 - ✓ Contract Enforcement
 - ✓ Arbitration & Regional
Dispute Resolution
Mechanism
 - ✓ Taxes and Duties



Additional Challenges Unique to the Sub-Region for Regional Energy Connectivity

S-SWA : Additional Challenges Unique to the Sub-Region for Regional Energy Connectivity

- ✓ Connectivity and communication network challenge.**
- ✓ Moving from Bilateral to Trilateral/Regional mode.**
- ✓ Lack of Integrated Capital Market in S-SWA Region.**
- ✓ Lack of Regional Institutional Mechanism/Institution.**
- ✓ Lack of competitive market structure, regional policy, regulatory framework**

S-SWA: Way Forward

Way Forward

Ratification and Implementation of Intergovernmental Framework Regional/bilateral Agreement/Treaties & expanding to countries such as Turkey & Iran.

Moving from Bilateral to Multilateral Trade of energy/electricity.

Institutionalizing the Process of CBET such as Creating Forum/Association of Regulators(SAFER) , Forum/Association of Transmission utilities (SAFTU), based on key learnings of International experience.

Coordination/Harmonization of Regulations, Technical Standards, Grid Codes ,Operating Procedures, common set of regulations.

Regional investor friendly framework and developing integrated capital market.

To establish competitive power market, trade on Power exchange, imbalance settlement mechanism, Open Access framework, transit fee mechanism, payment security mechanism etc.

Financial Viability of power sector needs to be improved to sustain CBET in long run

Transparent Regional Dispute Settlement mechanism

Data and Knowledge sharing, sharing of best practices, training, capacity building,

Thank You

S-SWA : Potential Mitigation Measures

Risk and Challenges

- Political instability
- Social unrest
- High transaction cost
- Non-discrimination
- Change of law
- Public governance

- Contract enforcement
- Lack Appropriate Regional dispute settlement Mechanism
- Ease of Doing Business, Administrative process
- Lack of Legal Framework and certainty & predictability

- Site identification and resource assessment
- Long Process of Land acquisition, environment, R&R
- Off-taker risk
- Lack of Skilled manpower

- Currency volatility risk
- Lack of Vibrant Capital Market
- Consistency in corporate tax policies, high lending rates.
- Corporate governance
- Liquidity issues, debt financing
- Long process of financial closure.

Country & Social

Lack of Common set Policy & Regulations

Infrastructure Development

Financial and Commercial

Mitigation

- Insurance for Political Risk
- Investment agreements such as free trade agreements
- PPP Business Model for risk sharing- BOO, BOOT
- Guarantee against expropriation

- Regional Institution for cross cutting of regulation.
- Standard contract such as PPAs and TSAs
- Regional dispute resolution mechanisms
- Capacity building of public institutions

- Common Payment Security Mechanism for addressing off take risk.
- Standard technology specific project development guidelines
- Single window clearance
- Regional skill development center

- Stable corporate tax frameworks
- Regional Capital market
- Concessional lending for Energy projects
- Currency hedging (swaps, options, forward contract)
- Better Corporate governance

S-SWA : Institutional Structure

	Afghanistan	Bangladesh	Bhutan	India*	Nepal	Maldives	Pakistan	Sri Lanka	Iran	Turkey
Policy	Under various ministries- Energy & Water, Mines, Commerce & Industries etc.	Ministry of Power, Energy, and Mineral Resources	The Ministry of Economic Affairs & Dept of Energy	Ministries of Power, Renewable Energy, Coal, Oil& gas State level ministries/ energy & power departments	Ministry of Water Resources; multiple councils and commissions	Multiple Ministries of Energy, Water & Environment; Trade & Industries etc.	Ministry of Water & Power, National Economic Council	Ministry of Power & Energy	Ministry of Energy	Ministry of Energy and Natural resources
Regulation	Afghanistan Electricity Regulatory Authority (AERA) under the Ministry of Energy	BERC – Bangladesh Energy Regulatory Commission	Bhutan Electricity Authority (BEA)	Central Electricity Regulatory Commission (CERC) and State level- SERCs	ETFC/ NERC (still under finalization)	Maldives energy authority.	National Electric Power Regulatory Authority (NEPRA)	Public Utilities Commission of Sri Lanka (PUCSL)	Iran Electricity Regulatory Board (IERB) Under Ministry of Energy.	EPDK or EMRA viz. Energy Market Regulatory Authority, Independent Regulator

S-SWA : Institutional Structure

	Afghanistan	Bangladesh	Bhutan	India*	Nepal	Maldives	Pakistan	Sri Lanka	Iran	Turkey
Generation	Da Afghanistan Breshna Sherkat (DABS)	Bangladesh Power Development Board (BPDB) and its subsidiaries companies, IPPs	Public sector (DGPC), IPPs	Public sector (NTPC, NHPC etc.) , State owned generation utilities , IPPs	Nepal Electricity Authority, IPPs	State Electric Company , Island Development Committees (IDCs), and private companies	State owned generation companies for thermal, WAPDA for hydel and IPPs, Karachi ESCO	Ceylon Electricity Board (CEB) and IPPs	Iran Power Generation, Transmission & Distribution Management Company (Tavanir)	EUAS
Transmission	DABS	PGCB – Power Grid Company of Bangladesh Limited	BPC	PGCIL , State transmission utilities & other licensees (Pvt / joint ventures);	NEA	-	National Transmission & Power Dispatch Company (NTDC)	CEB	Iran Power Generation, Transmission & Distribution Management Company (Tavanir)	TEIAS
System operation	DABS	NLDC of PGCB	BPC	POSOCO (NLDC & 5 RLDCs); SLDCs of states	NEA	-	NTDC	CEB	Iran Power Generation, Transmission & Distribution Management Company (Tavanir)	TEIAS

S-SWA: Institutional Structure										
	Afghanistan	Bangladesh	Bhutan	India*	Nepal	Maldives	Pakistan	Sri Lanka	Iran	Turkey
Distribution	DABS	BPDB and subsidiary distribution companies	BPC	State distribution companies (discos), Pvt. discos, franchisees	NEA	Electricity provider is also responsible for distribution	Govt owned electric supply companies (ESCOs) and KESCO, a pvt company	CEB & Lanka Electricity Company Ltd (LECO)	Iran Power Generation, Transmission & Distribution Management Company (Tavanir)	TETAS
Trading	DABS	BPDB	BPC	Discos, Traders (PTC, NVVN, Pvt traders, captive plants, Bulk purchasers, IPPs),power exchange	NEA	-	CPPA-G	CEB	Iran Power Generation, Transmission & Distribution Management Company (Tavanir)	TETAS

S-SWA: Recommendations and Roadmap

Activity	Short Term (1-3 years)	Medium Term (3-6 years)	Long Term (more than 6 years)
Intergovernmental Treaties/Agreements/MOUs on Energy Cooperation & integration	<p>a) Expediting Ratification of Intergovernmental Agreement on Energy Cooperation by all the South Asian country member states signed in November'2014 (Out of 8, 6 SAC have ratified so far)</p> <p>b) Inter-Utilities MOUs/Agreement to promote coordinated Transmission planning, Cross Border interconnection, Power system Operation etc.</p> <p>c) To create Intergovernmental Committee to supervise Progress of treaties/MOUs/Agreements.</p>	<p>a) To initiate action for building consensus among S-SWA/Asia Pacific to develop/extend Intergovernmental Energy Cooperation Agreement/MOU to promote Energy cooperation and Integration.</p> <p>b) Initiate action for developing Intergovernmental agreement between member countries for developing Capital Market in the Region.</p>	<p>a) Signing & implementation of Intergovernmental Energy Cooperation Agreement/Treaties/MOUs at S-SWA/Asia Pacific to promote Energy cooperation and Integration.</p> <p>b) Signing of Intergovernmental agreement between member countries for developing Capital Market in the Region.</p>

S-SWA: Recommendations & Roadmap

Activities	Short Term (1-3 years)	Medium Term (3-6 years)	Long Term (more than 6 years)
Institutionalization Process	<p>a) Initiate action for effective implementation/operationalization of SAARC Council of Experts of Energy Regulators/SAFIR Working Group/Forum/Association as a first step.</p> <p>b) Initiate action for building consensus for establishing Forum/Association of Transmission Utilities/System Operators for Coordinated Transmission Planning and Power System Operation</p> <p>c) Initiate action for establishing Regional Energy Investment forum/Association to facilitate mobilization of investment /achieving financial closure of the cross border projects.</p>	<p>a) Operationalization of the SAARC council of experts of Energy Regulators/SAFIR working group/Forum/Association of Institution for Coordination of regulations at the South Asia level.</p> <p>b) To establish association/Forum of Institution of Transmission utilities/System Operators for coordinated transmission planning/ system operation at the South Asia Level.</p> <p>c) To establish Regional Energy Investment forum/Association to facilitate mobilization of investment/ achieving financial closure.</p> <p>d) To initiate action for building consensus for extending/establishing Institution of Forum/Association etc. for Regulations, Transmission planning and system Operation at S-SWA/Asia Pacific level.</p>	<p>a) To establish and Operationalize Institutions for Coordination of regulations, Transmission Planning/System Operators and Investment facilitation forum at S-SWA/Asia Pacific level.</p>

S-SWA : Recommendations & Roadmap			
Activities	Short Term (1-3 years)	Medium Term (3-6 years)	Long Term (more than 6 years)
Regional Policy and Regulatory Framework	<ul style="list-style-type: none"> a) Aligning the existing Policy & Regulatory frameworks with respect to CBET to identify and remove barriers through changes and amendments/ new notification etc. by conducting in-depth research and analysis. b) To develop Model/Common set of Regional Policy & Regulatory Framework for CBET such as licensing, open access, deviation settlement mechanism, grid codes harmonization, transmission pricing framework etc. c) To initiate action for building consensus for creating effective Transparent Regional Dispute Settlement Mechanism and Institution among the member states. d) Knowledge Sharing and Capacity Building on Energy/Power covering gas pipelines, Regulations, transmission system network, system operations etc. among the member states. 	<ul style="list-style-type: none"> a) Building Consensus on Model Regulation among National Regulators. b) Adoption/Notification of Model Regional Policy & Regulatory framework by Nation Regulators. c) Work towards implementation of development of S-SWA/Asia Pacific Regional Dispute Settlement Mechanism. d) Creating consensus among S-SWA/Asia Pacific wide Regulatory and Policy framework. 	Implementation of Regional Policy and Regulatory Framework across the SWA/Asia Pacific.

S-SWA: Recommendations & Roadmap			
Activities	Short Term (1-3 years)	Medium Term (3-6 years)	Long Term (more than 6 years)
Cross Border Energy /Electricity Infrastructure Projects	a) Regional Planning of Cross Border Energy/Electricity Infrastructure Projects such as transmission lines, oil & gas Pipelines, Hydro Power Projects etc. b) To develop Regional Energy/Electricity Interconnection Master Plan.	a) Development of S-SWA Regional Power Grid (SAARC Power Grid + South West Asia Grid) master plan. b) Identification and carrying out Techno-economic feasibility study of Specific Cross Border Transmission Interconnection Links in the region.	a) Implementation of S-SWA/Asia Pacific Wide Regional Energy/electricity Master Plan. b) Consultation and Continuous updating of transmission plans from time to time.

S-SWA: Recommendations & Roadmap			
Activities	Short Term (1-3 years)	Medium Term (3-6 years)	Long Term (more than 6 years)
Renewable Energy Integration and Climate Change, New Energy Technologies	<p>a) Study on each country’s Renewable energy plan including hydro power development and as a region whole and potential CO2 emission reduction from cross border regional renewable energy trade.</p> <p>b) Study on economic benefits of the renewable energy power trade and CO2 emission in the region.</p> <p>a) To develop favorable Policies/Regulations to promote Renewable Energy.</p> <p>d) Study on Energy Efficiency, Smart grid and Demand side Management potential and perspective energy cooperation in the above areas among S-SWA region.</p>	<p>a) Implementation of Policies/Regulations on Renewable Energy by the decision makers/Regulators of Countries.</p> <p>b) Implementation of Energy Efficiency, Smart grid and Demand Side Management opportunities in the S-SWA region.</p>	<p>a) Updating of Renewable Energy Plan and Policies/Regulations periodically.</p>

S-SWA : Recommendations & Roadmap

Activities	Short Term (1-3 years)	Medium Term (3-6 years)	Long Term (more than 6 years)
Investment Mobilization for CBET projects Infrastructure	<ul style="list-style-type: none"> a) Study on investment frameworks/guidelines of each countries and come up with a regional Investment Friendly Guidelines & Framework for promoting investment. b) Study on Renewable energy financing Instruments in the Region and lesson learned from Best Practices. c) Study on developing Capital market in the Region. d) Regional Energy Investment Risk assessment study. e) To hold regular Annual Energy Investment Dialogue. 	<ul style="list-style-type: none"> a) Building Consensus and to notify investment friendly policies/regulations by the decision makers/regulators of each country for promoting investment including Renewable energy in the Region. b) Initiate building Consensus for developing Regional Capital Market for mobilizing investment. 	<ul style="list-style-type: none"> a) Operationalization of Regional Capital market.

S-SWA: Recommendations & Roadmap			
Activities	Short Term (1-3 years)	Medium Term (3-6 years)	Long Term (more than 6 years)
Establishing Intergovernmental/Energy Expert Sub Groups a) Sub groups 1 on coordination of Policy, Legal, Regulatory framework b) Sub group 2 on Transboundary Electric Transmission Interconnection Planning and Technical Standards Harmonization and c) Sub Group 3 on Power Market	a) Developing Terms of Reference /Scope of Work of each sub group. b) Obtaining nomination and Constitution of Inter-Governmental/Energy Experts Sub groups in the Region on South Asia level first. c) Regular Meetings of Sub groups to enhance energy cooperation/integration. d) Developing Reports/recommendations of Sub groups for consensus building. e) Developing Working Plan/Action Plan. f) To facilitate Research Studies to promote Energy Cooperation/Integration in the Region.	a)Building Consensus for creating Sub-groups for extending SWA/Asia Pacific of Intergovernmental/Energy Expert Sub Groups a) Sub groups 1 on coordination of Policy, Legal, Regulatory framework b) Sub group 2 on Transboundary Electric Transmission Interconnection Planning and Technical Standards Harmonization and c) Sub Group 3 on Power Market	a) Establish SWA/Asia Pacific Intergovernmental/Energy Expert Sub groups a) Sub groups on coordination of Policy, Legal, Regulatory framework b) Sub group 2 on Transboundary Electric Transmission Interconnection Planning and Technical Standards Harmonization and c) Sub Group 3 on Power Market b) Regular Meetings of Sub groups to enhance energy cooperation and integration in the region. c) Developing Reports/recommendations of Sub groups for consensus building. d) Regularly developing Annual Working Plan/Action Plan of the sub-groups. e) To facilitate Research Studies to promote Energy Cooperation/Integration in the Region.