

SAARC Dissemination Workshop for the Study on "SAARC Energy Outlook 2030"

Presentation 2: Assessment of conventional energy sources in SAARC Member States

Presenter: CRISIL Research

Energy Profile of SMS- Review: How Conventional energy stack up

Country	Total Primary Energy in 2012/ FY13 (MTOE)	Conventional and non conventional energy mix (2012/ FY13)	Total Primary Energy in 2017/ FY18 (MTOE)	Conventional and non conventional energy mix (2017/ FY18)	Major non conventional energy sources
Afghanistan	5.7		4.3		POL, Coal
Bangladesh	25.7		37.5		Gas, POL
Bhutan	0.6		0.7		POL
India	651.2		816.8		Coal, POL
Maldives	0.4		0.5		POL
Nepal	10.0		13.5		POL
Pakistan	57.7		74.6		Gas, POL
Sri Lanka	9.6		11.4		POL
		Conventional Energy Non-Conventional Energy	Conventional includes coal, oil, gas, nuclear		

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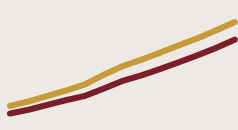
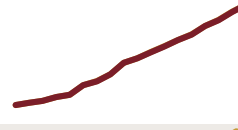
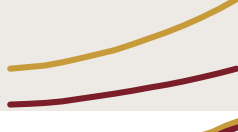
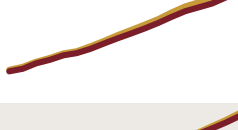
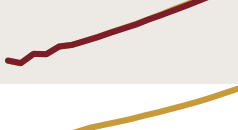
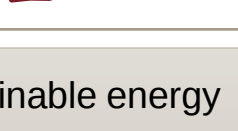
- Except Sri Lanka, Nepal and Bhutan, all other SMS are heavily dependant on CE
- Countries with very high CE usage include India (97%), Pakistan (96%), Maldives (100%) and Bangladesh (>99%)

Energy Profile of SMS: Country-wise, Fuel-wise Review

Country	Total Conventional Energy (FY13/ 2012) (MTOE)	Conventional energy mix (FY13/ 2012)	Total Conventional Energy (FY 18/ 2017) (MTOE)	Conventional energy mix (FY18/ 2017)
Afghanistan	5.3		3.8	
Bangladesh	25.6		37.5	
Bhutan	0.2		0.3	
India	637.4		797.8	
Maldives	0.4		0.5	
Nepal	1.7		3.3	
Pakistan	55.2		71.8	
Sri Lanka	4.4		6.4	
Coal POL Gas Imported Electricity Nuclear				

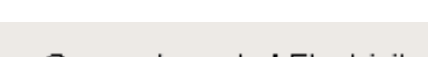
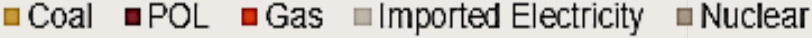
- POL is the most dominant fuel among conventional energy sources in most SMS
- Gas continues to be the most important fuel in Bangladesh and Pakistan due to large reserves
- India, the largest among SMS, is heavily reliant on coal while Bhutan and Afghanistan continue to meet significant PE requirements through imported coal

Energy Profile of SMS – Outlook: Conventional energy usage rises at 4.7% in line with primary energy growth between fiscals 2018 and 2030

Country	Total Primary Energy in FY18/2017 (MTOE)	Total Conventional Energy (FY 18/2017) (MTOE)	Total Primary Energy in FY30/2030 (MTOE)	Total Conventional Energy (FY 30/2030) (MTOE)	Growth in primary energy vis-à-vis conventional energy
Afghanistan	4.3	3.8	9.3 6.6%↑	8.3 6.5%↑	
Bangladesh	37.5	37.5	85.3 7.1%↑	85.2 7.1%↑	
Bhutan	0.7	0.3	1.5 6.0%↑	0.7 7.1%↑	
India	816.8	797.8	1,391.3 4.5%↑	1,334.4 4.4%↑	
Maldives	0.5	0.5	1.2 5.7%↑	1.1 5.5%↑	
Nepal	13.5	3.3	21.2 3.8%↑	8.1 7.6%↑	
Pakistan	74.6	71.8	147.3 5.8%↑	141.4 5.8%↑	
Sri Lanka	11.4	6.4	16.2 2.7%↑	11.7 4.7%↑	

- All SMS continue to be strongly dependant on conventional energy sources despite focus of RE and sustainable energy basket
- Expected Rise in PE between fiscals 2018 and 2030 is 4.75% on-year while rise in CE during the same time is 4.65%

Energy Profile of SMS: Country-wise, Fuel wise outlook

Country	Total Conventional Energy (FY24/ 2023) (MTOE)	Conventional energy mix (FY24/ 2023)	Total Conventional Energy (FY 30/ 2030) (MTOE)	Conventional energy mix (FY30/ 2030)
Afghanistan	5.8		8.3	
Bangladesh	60.5		85.2	
Bhutan	0.4		0.7	
India	1,065.9		1,334.4	
Maldives	0.8		1.1	
Nepal	5.2		8.1	
Pakistan	104.0		141.4	
Sri Lanka	8.3		11.7	
				

- Coal and POL usage rises at the expense of depleting gas reserves and cheaper alternatives
- Most CE is served through imports while countries like Pakistan and Bangladesh is expected to expedite new coal blocs in the country to service incremental demand and displace gas usage

Coal-based PE: Review and Outlook

Country	Coal Based Primary Energy in 2012/ FY13 (MTOE)	Percentage of primary energy met through coal in 2012/ FY13 (%)	Coal Based Primary Energy in 2017/ FY18 (MTOE)	Percentage of primary energy met through coal in 2017/ FY18 (%)	Coal Based Primary Energy in 2023/ FY24 (MTOE)	Percentage of primary energy met through coal in 2023/ FY24 (%)	Coal Based Primary Energy in 2023/ FY24 (MTOE)	Percentage of primary energy met through coal in 2023/ FY24 (%)
Afghanistan	1	15	1	29	2	27	3	28
Bangladesh	1	5	2	4	6	10	7	8
Bhutan	0.1	15	0.1	18	0	20	0	21
India	417	64	532	65	733	66	922	66
Maldives	0	0	0	0	0	0	0	0
Nepal	0.4	4	1	5	1	7	2	8
Pakistan	4	7	7	9	21	19	34	23
Sri Lanka	0.4	4	1	10	1	10	3	17
Total	424	56	543	57	764	58	971	58

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Coal-based demand-supply across SMS

Country	Major Usage	Demand Growth*	Supply Position	Consumption Outlook**
Afghanistan	Cement, construction	High	High; No import necessitated	0.9 1.2 1.8 2.7
Bangladesh	Power, industry	High (13%)	Low; ~60% demand to be serviced through imports	1.2 1.6 6.0 6.9
Bhutan	Ferro alloy and cement industries	High (8%)	Low, entire demand to be serviced through imports post 2020	0.10 0.13 0.19 0.33
India	Power, industry	High (5%)	Low; ~12% of non-coking coal and ~79% of coking coal to be serviced through import	417 532 733 922
Maldives	No coal used	Nil	Nil	NA
Nepal	Industry (cement, brick, metal)	High (8%)	Very Low; >99% of coal demand to be serviced through import	0.4 0.7 1.1 1.8
Pakistan	Cement, brick kiln, power	Very high (15%)	High; ~6% of coal demand to be serviced through imports	4 7 21 34
Sri Lanka	Power, cement and steel plants	High (7%)	Nil; all coal demand to be serviced through imports	0.4 1.2 1.3 2.8

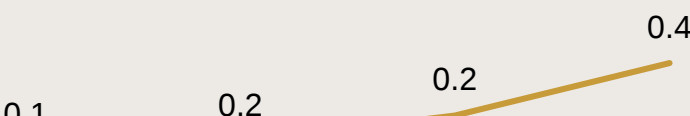
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Oil-based PE: Review and Outlook

Country	Oil Based Primary Energy in 2012/ FY13 (MTOE)	Percentage of primary energy met through oil in 2012/ FY13 (%)	Oil Based Primary Energy in 2017/ FY18 (MTOE)	Percentage of primary energy met through coal in 2017/ FY18 (%)	Oil Based Primary Energy in 2017/ FY18 (MTOE)	Percentage of primary energy met through coal in 2017/ FY18 (%)	Oil Based Primary Energy in 2017/ FY18 (MTOE)	Percentage of primary energy met through coal in 2017/ FY18 (%)
Afghanistan	4	71	2	49	3	49	5	50
Bangladesh	5	20	6	17	10	16	18	20
Bhutan	0.1	22	0	22	0.2	26	0.4	26
India	166	25	210	26	260	24	319	23
Maldives	0.4	100	0.5	94	1	99	0.8	69
Nepal	1	12	2	18	4	24	4	19
Pakistan	20	35	29	39	38	35	54.	37
Sri Lanka	4	42	5	46	6	47	8	49
Total	201	26	256	27	323	25	409	24

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Oil-based demand-supply across SMS: Consumption continues to soar despite limited domestic supply

Country	Major Usage	Demand Growth*	Supply Position	Consumption Outlook**
Afghanistan	Transport, domestic cooking	High (7%)	Nil; 100% imported	
Bangladesh	Transport, industrial, agricultural	High (9%)	Low; ~36% POL demand to be imported	
Bhutan	Transport, domestic fuel	High (7%)	Nil; 100% imported	
India	Power, industry	Moderate (4%)	Low; ~89% of crude to be imported while the country is surplus in refined POL	
Maldives	Residential, sea and land transport	High (6%)	Nil; 100% imported	
Nepal	Transport, residential cooking	High (8%)	Nil; 100% imported	
Pakistan	Transport, industry, power	High (5%)	High; ~56% of crude and 51% of POL to be imported	
Sri Lanka	Transport, industry	Moderate (3%)	Low; ~85% of crude to be imported	

*Growth in demand outlook between FY18 and FY30 given brackets
**Consumption given for the following years: FY13/2012, FY18/2017. FY24/2023, FY30/2030; all figures in MTOE

Gas-based PE across SMS

Country	Gas Based Primary Energy in 2012/ FY13 (MTOE)	Percentage of primary energy met through gas in 2012/ FY13 (%)	Gas Based Primary Energy in 2017/ FY18 (MTOE)	Percentage of primary energy met through gas in 2017/ FY18 (%)	Oil Based Primary Energy in 2023/ FY24 (MTOE)	Percentage of primary energy met through oil in 2023/ FY24 (%)	Oil Based Primary Energy in 2030/ FY30 (MTOE)	Percentage of primary energy met through coal in 2030/ FY30 (%)
Afghanistan	0.1	3	0.2	4	1	8	0.6	7
Bangladesh	19.3	75	29.0	77	44	72	0.1	0
Bhutan	0.0	0	0.0	0	0	0	0	0
India	52.2	8	52.5	6	67	6	82.8	6
Maldives	0.0	0	0.0	0	0	0	0	0
Nepal	0.0	0	0.0	0	0	0	0	0
Pakistan	30.8	53	35.5	47	43	40	50.7	34
Sri Lanka	0.0	0	0.0	0	1	7	0.9	5
Total	102.4	13	117	12	156	12	135	8

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Gas-based demand-supply across SMS: Gas usage reduces in SMS owing to constrained demand

Country	Major Usage	Demand Growth*	Supply Position	Consumption Outlook**
Afghanistan	Power, fertilizer	Very high (12%)	High; 100% demand to be met through domestic production	
Bangladesh	Power, fertilizer, industry	High (6%)	Low; ~45% of gas requirements to be imported	
Bhutan	No gas usage in the country	NA	NA	
India	Fertilizer, power, CGD, refineries	Moderate (4%)	Low; ~44% of demand to be met through imports	
Maldives	No gas usage in the country	NA	NA	
Nepal	No gas usage in the country	NA	NA	
Pakistan	Power, industry, domestic, commercial	Moderate (3%)	Moderate; ~14% of gas requirements to be imported	
Sri Lanka	Domestic, industry, power	High (Will grow to 0.9 MTOE in 2030 from 0 presently)	Low; ~90% of gas requirements to be imported	

*Growth in demand outlook between FY18 and FY30 given brackets
**Consumption given for the following years: FY13/2012, FY18/2017. FY24/2023, FY30/2030; all figures in MTOE

Thank You