ADB Clean Energy Week Workshop on Renewables in the Lower Mekong Region

The Role of Clean Energy and Renewables in the Lower Mekong Energy Scenario

Venkatachalam Anbumozhi

Economic Research Institute for ASEAN and East Asia (ERIA) v.anbumozhi@eria.org

Economic Structure and Energy Consumption in Lower Mekong, 2013

	GDP (Billion 2005US\$)	Share of Industry In GDP, % ¹	Share of Services in GDP, % ¹	Share of Agriculture in GDP, % ¹	Primary Energy Consumption (Mtoe)	Energy Consumption per Capita (toe/person)
Australia	818.3	28.5	69.0	2.5	135.8	6.1
Brunei Darussalam	10.1	71.7	27.7	0.6	3.4	8.3
Cambodia	9.3	23.5	39.8	36.7	5.3	0.4
China	4,194.9	46.6	43.4	10.0	2,727.7	2.0
India	1,326.2	27.2	54.9	17.9	749.5	0.6
Indonesia	402.4	47.1	38.2	14.7	227.5	0.9
Japan	4,622.0	26.2	72.7	1.2	461.5	3.6
Korea, Rep.	1,056.6	39.3	58.0	2.7	260.4	5.2
Lao PDR	4.3	34.8	35.7	29.5	2.4	0.4
Malaysia	187.8	40.4	47.8	11.8	64.3	2.2
Myanmar	21.5	40.1	37.5	39.8	14.1	0.3
New Zealand	122.2	24.1	69.3	6.6	18.2	4.1
Philippines	135.9	31.3	55.9	12.7	40.5	0.4
Singapore	178.2	26.7	73.3	0.0	29.8	5.7
Thailand	210.3	43.0	43.7	13.3	115.9	1.7
Vietnam	83.2	37.9	42.0	20.1	53.5	0.6

Renewable Energy shares in EAS Economies, 2011

Members	TPES	Shares (%)					
	(MTOE)	Bio	Hydro	Other REs	Non-REs		
China	2,438	8.3	2.6	O.7	88.5		
India	688	24.8	1.4	0.3	73.5		
Japan	497	1.2	1.4	0.7	96.7		
Korea	250	0.5	0.1	0.1	99.3		
Indonesia	208	26.0	0.7	7.8	65.5		
Australia	125	4.1	0.9	0.5	94.5		
Thailand	117	19.3	0.4	0.0	80.3		
Malaysia	73	4.7	0.8	0.0	94.5		
Vietnam	59	24.8	4.0	0.0	71.2		
Philippines	38	12.6	1.8	22.3	63.4		
Singapore	33	0.6	0.0	0.0	99.4		
New Zealand	18	6.5	11.7	20.8	61.0		
Myanmar	14	75.3	3.1	0.0	21.6		
Cambodia	5	72.0	0.1	0.0	27.9		
Brunei	3	0.0	0.0	0.0	100.0		
Lao PDR	2	67.0	13.0	0.0	20.0		
EAS	4,568	11.0	1.9	1.1	86.0		
World	12,782	9.8	2.3	0.9	87.0		
EAS/World %	35.7%	40.1%	29.7%	45.0%	35.3%		

Source: Author's calculations using data from the IEA (2012) and IRENA (2013)

Current Achievements of Lower Mekong Countries

The last two decades was characterized by the successful deployment of renewable energy sources across five countries— total RES deployment (including hydros) increase by more than 20%. In details

- RE electricity generation grew by approximately 40% and biofuels by a factor of 17 during the last two decades
- New renewables in the electric sector (all technologies including hydropower) increased fivefold during the same period
- Total investments amounts to US\$ 8 billion annually
- Employment due to RES amounts to about 0.5 million people in 2010
- Cost reductions for key technologies such as wind and PV solar are in line with learning curve expectations
- Lower Mekong is contributing to global RE deployment as an effort to mitigate climate change.

Policy Innovations Can help Renewables to attain its maximum potential



Renewables-based power increases by more than the current total power output of Indonesia & Thailand combined, although barriers to deployment need to be tackled

Policy Support is Needed to Tackle Non-economic Barriers

Analysis indicates in many EAS economies

Regulatory/ administrative barriers

- Lack of powerful institutions to implement RET
- Gaps in regulatory/legal framework
- Absence of adequate and targeted incentives
- Information barriers
 - Lack of information and awareness
 - Bias towards conventional energies (e.g. subsidies)

Financial barriers

- High up-front costs for investors
- High cost of capital for RET investments
- Other barriers
 - Technical/infrastructure
 - Social acceptance, etc.

Policy measures are tied to the Market Maturity of RET



Intra Regional Power Trade - Opportunities



Possible Power Infrastructure interconnections

Grid interconnection seems to provide enough economic benefit to rationalize large investments.

Route	Interconne construc	ection line tion cost	Net benefit (gross benefit - line cost)		Benefit/Cost	
	Mil. USD	US¢/kWh	Mil. USD	US¢/kWh	1000	
THA-LA	10	1,400	0.25	19,881	3.51	14.2
VNM-L	AO-THA	1,950	0.29	22,610	3.36	11.6
LAO-Th	HA-MYS-SGP	1,860	0.26	25,490	3.60	13.7

Challange

- Setting up regional regulatory body to harmonize regulations and standards relevant to power trade and grid interconnection.
- Regionally coordinated investment mechanism that optimizes the future investment plan of power station and grid.

Increase Efficiency of Clean Energy Deployment: Experiences from the Region for LMC



Policy Changes needed at national level

Provide Policy Stability

- Retroactive price changes are crucial policy mistakes but also other sudden changes
- Move away from annual budget planning with short and medium term rolling plans with proper MRV system in place
- Reduce Unproductive Revenue Risks
- Long term contracts with independent renewable power producers are most relevant
- Priority dispatch in case of grid congestion and compensation for forced curtailment
- Take stronger efforts to combine regulatory and market based RE support schemes to assure needed support prices
- Implement competitive elements
- Strict use of automatic degression formulas