

The Mekong Public Forum Energy Sector Workshop

Saving the Mekong
with Decentralized Generation, Smart
Grids, & Empowered Citizens



Mainstream Mekong dams are last century's technology

- Big hydro is technology from the 1950s; an electricity revolution is underway around the world and the Mekong economies/societies are getting left behind.
- Reality: big hydro industry survives on fear about global warming, state subsidies, political risk insurance schemes, monopoly buyers, and their license to ruin riparian ecosystems, displace people, and make these costs someone else's problem.
- Thanks to a well orchestrated campaign by big hydro industry/their apologists/their development banks/international consultants, Mekong governments and media “buy big hydro myths and ignore faster, cheaper ways to reduce emissions, expand supply.
- The notion of “kinder, gentler” dams on the scale proposed is fantasy; we can *replace dams* with *better* ways to meet *real energy* needs of rural and urban people.
- Power development plans fail to compare big hydro, big coal, big gas, and nuclear with competing technologies. Big hydro's *real competitors are decentralized generating technologies.*
- Why? Because while the real cost of big-scale power plants is going up, up, and up, the cost of cleaner, more reliable, environment-friendly and consumer-scale alternatives is coming down, globally.

Global Trend in DG

- DG supplies 1/6 to $> 1/2$ all electricity supply in 12 industrial countries
- 53% in Denmark
- 38% in Finland and Holland
- ~31% in Russia
- 20% in Germany
- 17% in Japan and Poland
- 15 – 20 % in Thailand
- (This is with market barriers still in place)

What is a decentralized power system?

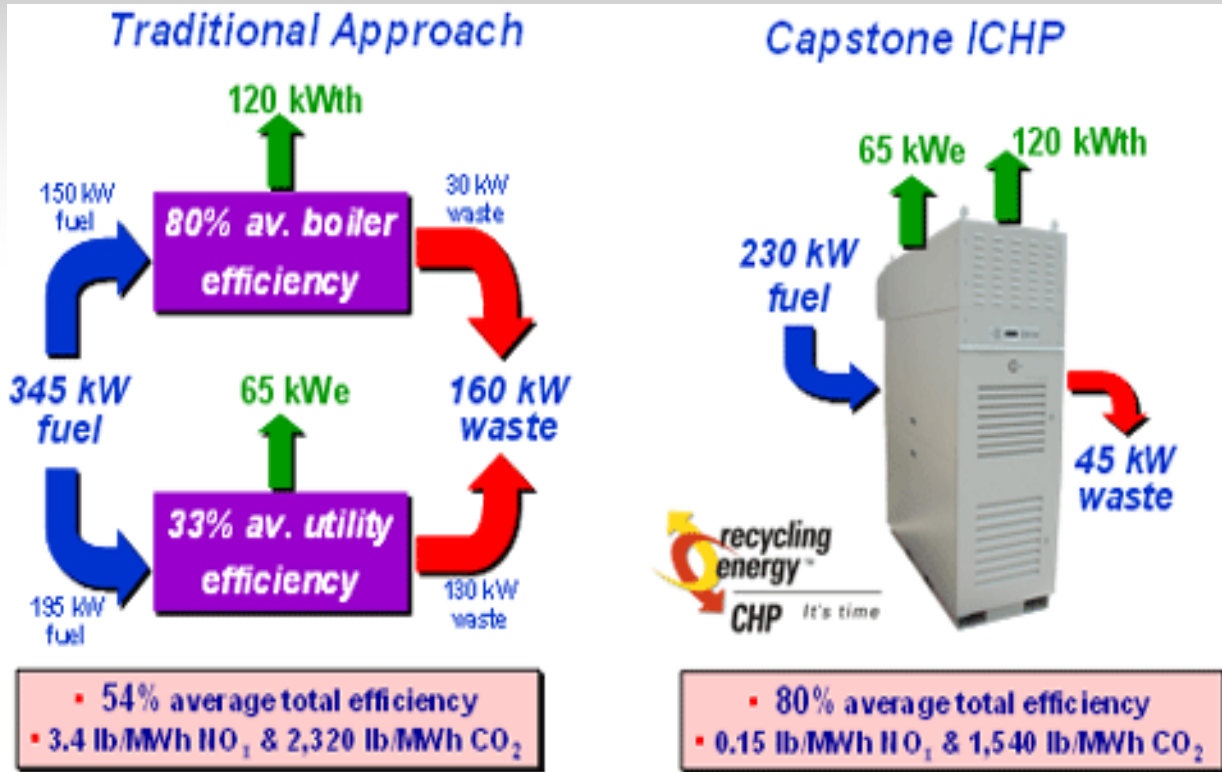
- Unlike big dams which take billions and many years to build, decentralized power generators can be installed quickly, recover investment within 3 to 5 years; do not require costly investment in transmission lines; do not flood large areas or require resettlement.
- Decentralized grid is *rules-based* not *politics-driven*; open to many different producers/consumers
- Generation units scaled to consumer needs, large and small
- SMART GRID – now homes, buildings, industry interconnected to local grid
- Small-scale renewables: 1 kw to 10 MW
- On-site generation at or near customers
- Medium-sized power plants sited near biggest load centres (no bigger than 300 MW)
- Decentralized grid designed for baseload is enough, not peak demand

What technologies are driving the electricity revolution globally?

(1) Renewables – solar, micro-hydro, bio-mass
(abundant sources in the Mekong region)

(2) On-site power plants and cogeneration:
industrial-scale cogeneration
building-scale cogeneration
waste heat recovery cogeneration

Fuel-Efficient Cogen Systems



Capstone www.capstoneturbine.com

Here comes the sun!

- Cost of solar power home systems are expected to reach 10 to 15 cents per kilowatt-hour by 2010. Imagine what this means for Mekong region!
- Nanosolar (YouTube video) is “printing” solar panels at a rate of 1000 MW a year!
- Imagine what this could mean for the Mekong region!
- Consider: Rural and urban Cambodians pay 50 – 60 cents per kWh for electricity from old, inefficient, dirty generators. Hundreds of companies could help install new solar, micro-hydro, microturbines, cogen,but energy ministry/state utility fixated on big dams.

Mekong Region

- Small power producers still seen as unimportant/supplemental not competitors;
- Bigger-is-better approach still rules
- Technical misconceptions about DG persist
- Achievable DG potential not yet recognized by energy ministries

DG offers developing countries economic benefits

Chrisopher Vitzhum, Vice President, Wartsila, Finland,
Chair of the World Alliance for Decentralized Energy:

- Developing countries, especially where there is no grid yet, have a “unique opportunity” to develop decentralized power grids but governments “need to have the courage to resist external pressure.”

Advancing DG & Smart Grids

What can we do? (and quickly)

- Decentralized generation is for everyone, based on democratic principles, rule of law, innovation, public participation NOT oldstyle monopolies and central planners
- Don't waste your breath on utility dinosaurs! Alert concerned ratepayers and progressive elected representatives to economic and environmental advantages for off-grid and grid customers throughout the region.
- No reason why Ubon or Chiengrai or Luang Prabang, Pakse, Stung Treng or Can Tho cannot develop a decentralized power strategy to “compete” and displace big dams, coal, nuclear, etc.
- Know your allies; new technological suppliers and entrepreneurs are everywhere
- Demand open competitive procurement and decentralized electricity decision making
- Work with the new electricity regulators (in China, Thailand, Vietnam) to open cost/rate review of conventional power projects; transparency will help us involve more actors to challenge status quo
- Thailand leads the way with rules allowing investment in small-scale cogeneration, microhydro, etc. AND allowing them to sell to the grid. All countries need to introduce new rules that support decentralized technologies, multiple suppliers, and smart grids. Let's encourage new rules for decentralized generation in all Mekong countries.

Save the Mekong, Decentralize power!

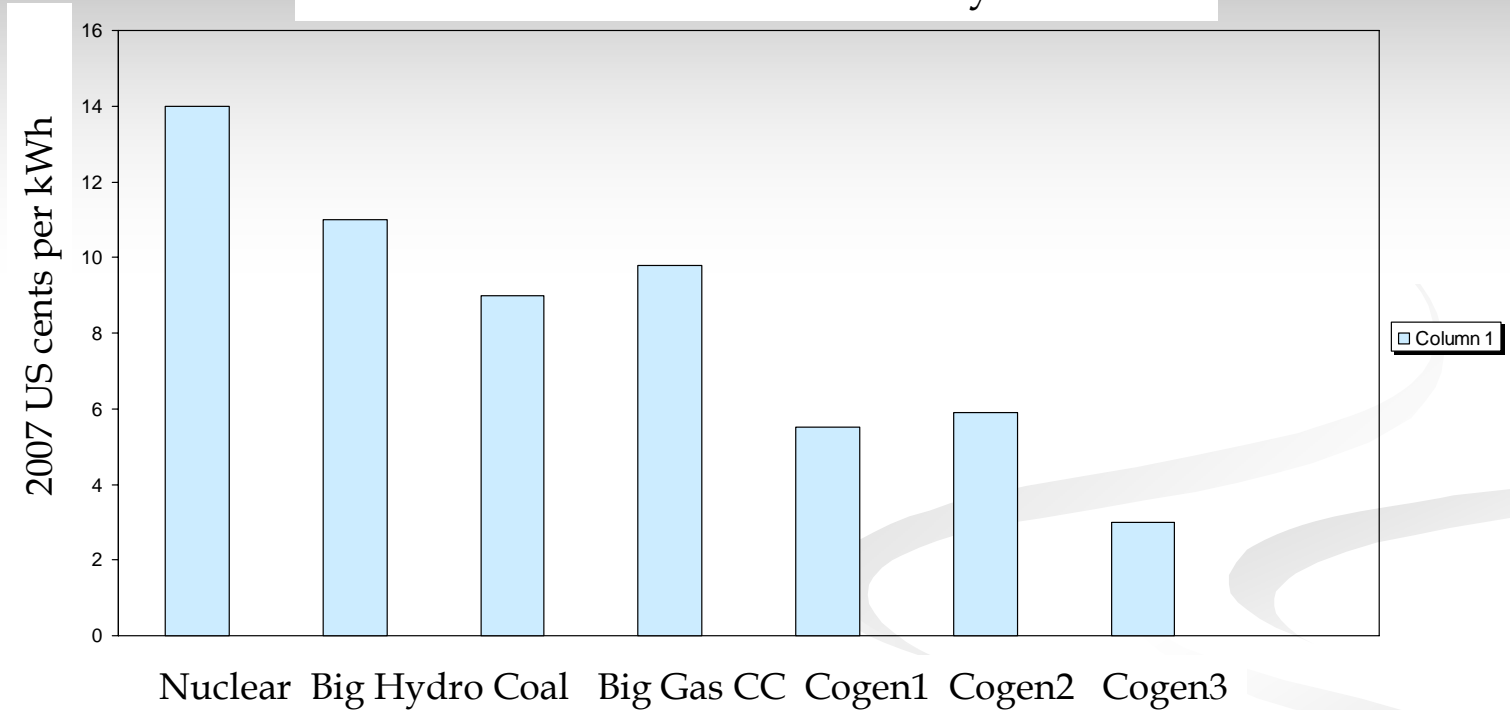
Grainne Ryder, Probe International

VSPP applications submitted as of June 2008

	MEA			PEA			TOTAL		
	qty	installed (MW)	sale (MW)	qty	installed (MW)	sale (MW)	qty	installed (MW)	sale (MW)
1. Fossil									
coal	0	-	-	4	124.00	21.00	4	124.00	21.00
natural gas	1	9.60	6.40	2	17.09	6.00	3	26.69	12.40
fossil total	1	9.60	6.40	6	141.09	27.00	7	150.69	33.40
2. Renewable									
solar	49	0.665	0.663	170	927.681	892.059	219	928.345	892.721
biogas	1	1.200	0.950	49	61.961	52.033	50	63.161	52.983
rice husk	-	-	-	45	406.525	319.050	45	406.525	319.050
bagasse	-	-	-	31	602.800	175.800	31	602.800	175.800
other biomass (saw dust, palm)	-	-	-	61	325.766	262.535	61	325.766	262.535
biodiesel	-	-	-	1	0.025	0.025	1	0.025	0.025
municipal waste	-	-	-	18	108.660	96.160	18	108.660	96.160
hydro	-	-	-	4	5.160	5.130	4	5.160	5.130
wind	-	-	-	6	20.614	20.630	6	20.614	20.630
renewable total	50	1.865	1.613	385	2,459.192	1,823.422	435	2,461.056	1,825.034
total	51	11.465	8.013	391	2,600.282	1,850.422	442	2,611.746	1,858.434

Cost comparison

Cost of new *delivered* electricity



“Adder” to normal tariff for SPPs and VSPPs

Fuel/technology	Adder baht/kWh	Adder US cents/kWh	Estimated Average Cost of Generation (US c/kWh)
Solar	8.0	25.81	~33
Wind	3.50	11.29	~18.3
Biomass VSPPs	0.30	0.97	~8
Biomass SPPs (Competitive bidding)	0.18	0.56	~7.5
Biogas (<100kW)	0.30	0.97	~8
Mini-hydro	0.40	1.29	~7.3
Micro-hydro (<100kW)	0.80	2.58	~9.6