Best Practices in EE and RE in Industry



EWG 19/2011A: Best Practices in Energy Efficiency and Renewable Energy Technologies in the Industrial Sector in APEC Region

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Best Practices in EE and RE in Industry	AREC
EE & RE Examples Selected	
 Bagasse Power in Sugar Mills – Australia Bagasse Fired Cogeneration – Thailand Bagasse Power and Fuel Production – USA Bagasse Cogeneration in an Edible Oil Refinery – Ind 	Asia-Pacific Economic Cooperation
 Biomass Gasification in Ethanol Production – USA Biogas to Heat and Power – Canada 	
• Large Scale Industrial Biogas – China	
 Tallow Fuelled Boilers – New Zealand Sawmill Powered by Wood Waste – Australia 	
 Wood-waste in Different End Uses – Malaysia, New Z ✓ Timber Drying. 	ealand, Singapore
Cogeneration of Heat and Power for Waste Proc	
 Maximizing the End Use Efficiency of Wood Was Production of Briguettes for Boiler Fuel. 	ite.
 Combined Application of Several Energy Efficien Sewage Sludge Disposal. 	icy Initiatives.
• Watermill Upgrading – Nepal	
 Micro-Hydro Electricity Generation – Indonesia 	
• Solar Crop Drying – Indonesia	
Solar Thermal Process Heat – USA	
Concentrated Solar Thermal Power Plant – Thailand	
Hybrid Solar Thermal and PV for Process Heat and Po	ower – USA
 Solar Cooling and Process Heat – Singapore Changbin and Taichung Wind Farms - Chinese Taipei 	
• Changon and raichung wind Farins - Chinese Taiper	

Best Practices in EE and RE in Industry

- For each EE & RE Example
 - ✓ Project Description
 - ✓ Coupling with Energy Efficiency
 - ✓ Project Highlights
 - ✓ Economics
 - ✓ Obstacles Encountered
 - ✓ Lessons Learned
 - ✓ Contact Information
- From all EE & RE Examples
 - ✓ Identify obstacles
 - ➤ Generic
 - > Technology specific
 - > Industry specific
 - ✓ Establish lessons learned

➤ Generic

- ➤ Financial and Economic
- > Institutional
- Technology specific



nu Khieo Bio-Energy hailanc courtesy by COGEN 3 Info

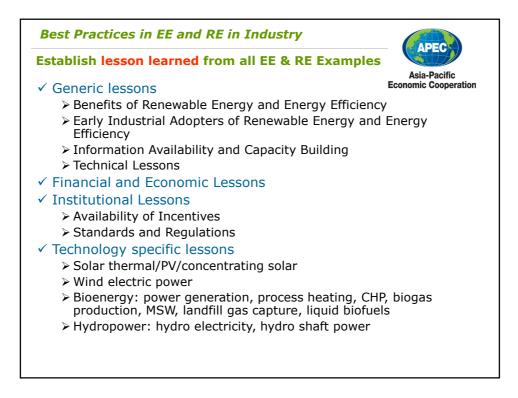
✓ Formulate *Best Practices*

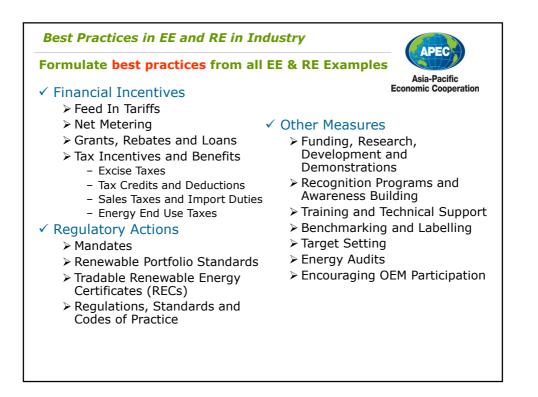
- > Financial incentives
- ➢ Regulatory actions

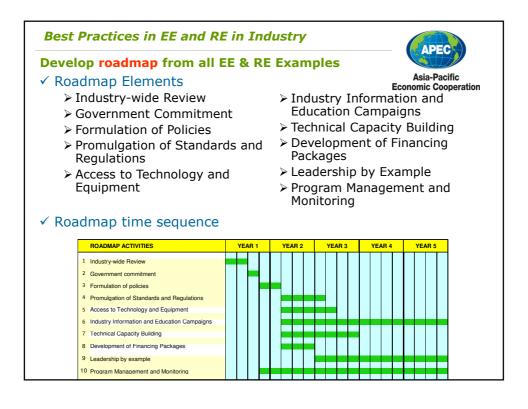
> Other measures

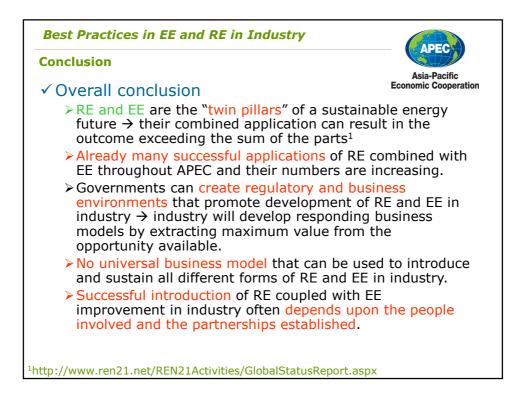
- Funding, R/D, Demos
 Recognition, awareness
- Training/technical support
- _ Benchmarking & labeling
- Target setting
- ✓ Prepare *Roadmap*
 - > Roadmap elements
 - ➤ Roadmap time sequence

Identify obstacles from all EE &	
 Generic obstacles Information access & Implemention Access to information Information transfer and persection Implementation capacity Project ownership issues Management and worker persection Championship Stakeholder engagement Financial & Economic issues Establishment costs Economic viability 	Asia-Pacific Economic Cooperation entation capacity sonnel training ceptions ✓ Technology specific obstacles > Solar thermal: conservative nature of building and architecture > Bioenergy: availability of
 Access to capital Institutional obstacles Incentives Standards and regulations Administrative barriers 	feedstock/land/stockpiling ✓ Industry specific obstacles > Availability of suitable land for large-scale installation > Cost to accommodate RE & EE infrastructure > Availability and effective utilization of waste heat



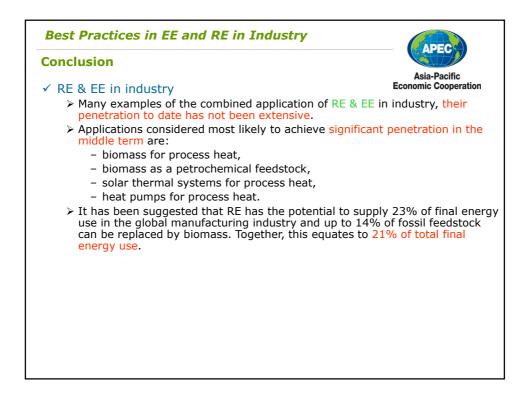








Conclusion	
✓ Combination of RE & EE	Asia-Pacific Economic Cooperation
Combined application of RE & EE in industries	ry is a natural marriage
 industry operators who have the fores fossil fuels to renewable fuels are very renewable fuel by maximizing the efficiency of the fourthinking to include energy in industry to achieve maximum vacommunity, economy and planet with its in 	y likely to maximize the value of th ciency of its use in their plants. the efficient use of renewable alue for ALL (industrial end user,
 Combined use of RE & EE in industry need can maximize the benefits that can be ach minimizing the specific energy consum 	ieved, e.g
production, – maximizing revenues and economic va – minimizing the use of fossil fuels,	alue for an industrial company,
 reducing GHG emissions, managing waste disposal, 	
 minimizing environmental impacts, job creation, 	
 improvement of industrial working cor Combined RE & EE initiatives may be quite targeted by a particular industry or industrial 	e different depending on which is



Conclusion		
✓ Barrier & Obstacles	Asia-Pacific Economic Cooperation	
Obstacles encountered in industry are very n the introduction of new and unconventional t		
No particular obstacles unique for the introdu industry other than those applicable to speci	uction of RE & EE initiatives in	
Individual industries, technologies and locati characteristics and obstacles that may be of situation can be quite minor in another.	ons have their own	
Obstacles that can be addressed by Governme Obstacles that can	nents include:	
 lack of information about how the introduction industries, 	of RE & EE can benefit specific	
 insufficient capacity to implement the technolo manner, 	ogy in a timely and cost effective	
 high project establishment costs, 		
 reduced economic viability due to competition 	with subsided fossil fuels,	
 difficulties in accessing capital, 		
 institutional obstacles such as: ack, or inadequacy, of appropriate incentive 	was	
 ineffective regulatory regimes that are not inadequate administrative structures and p 	supportive,	
These issues have been addressed successful economies and industries and are diminishin gained, capacity built and costs reduced.		

