
Supporting S&L Policy in Asian Countries -Policy Impacts and Potential

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Projects METI has funded at CLASP via IEEJ

Country	Activity	Year	Can energy savings be attributed?
Global	Global Assessment of Potential Savings from S&L Programs	2007	No
China	Impacts of 11 S&L Programs	2005	No
China	Assessment of Accelerating the Adoption of Second-Tier Reach Standards	2006	Possibly
China	Assessment of the Monitoring and Enforcement System for MEPS & Information Label	2006	Possibly
China	2nd Round of Check-Testing of Manufacturer Self Reported Labeling Data & Compliance with MEPS	2007	Possibly
China	Refrigerator Information Label: Specification Development and Potential Impact	2007	Yes
China	AC Metering Project (single, variable speed and ACs with heat pumps)	2008-9	Possibly
China	Development of a Unified Test Procedure for single and variable speed ACs)	2008-9	Likely
Vietnam	Study Tour and Training for S&L	2007	No
Vietnam	AC Market Assessment Study	2008	No
India	Comparative Energy Information Labeling in India: A Case Study	2005	No

Detail on China Refrigerator Info Label: Specification Development and Potential Impact



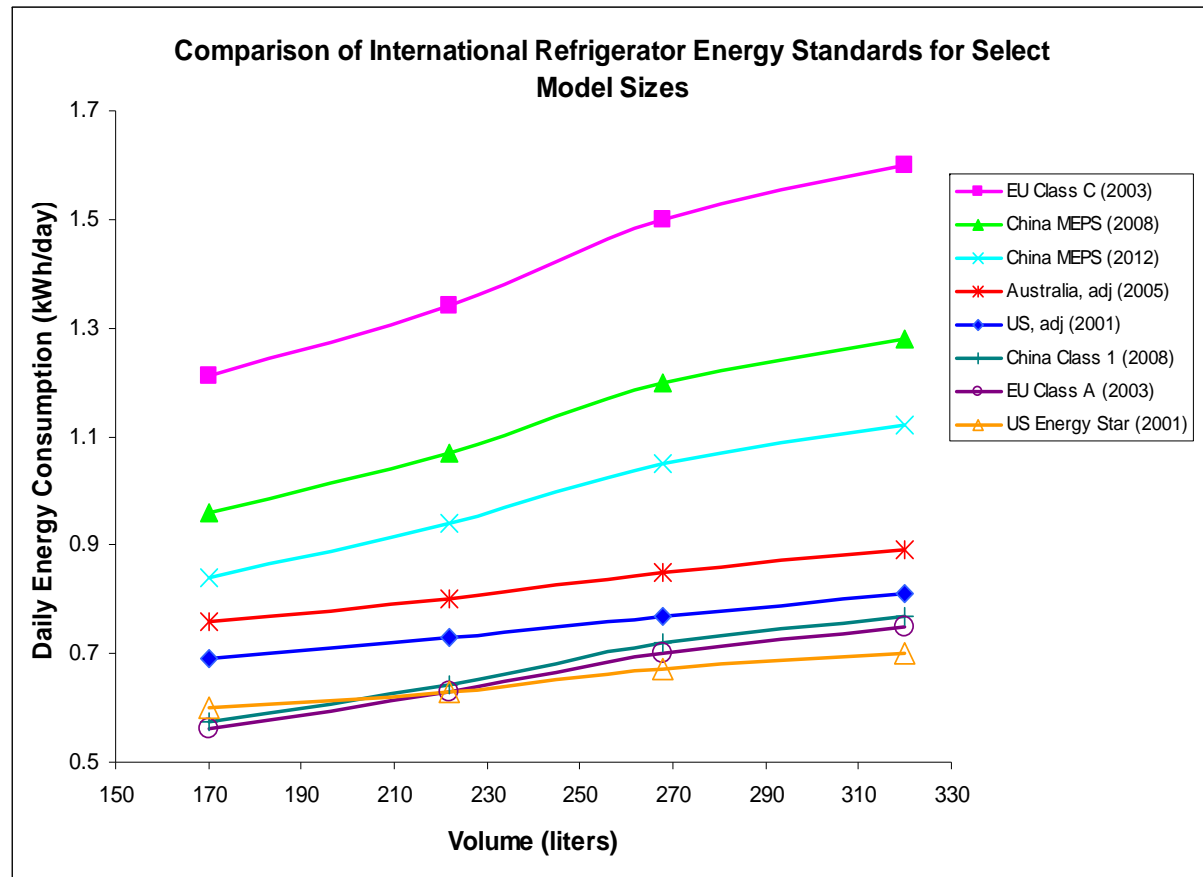
- ❖ Final Report Submitted Mar. 2008
- ❖ Primary output is new refrigerator label specifications.

- Maintained approach first adopted in 2005 of establishing efficiency levels relative to MEPS
- Levels are 20% higher than those established in 2003 and implemented in 2005.
- Focus of improvement was on the standard refrigerator/freezer (class 5), which constitutes the bulk of the Chinese market.



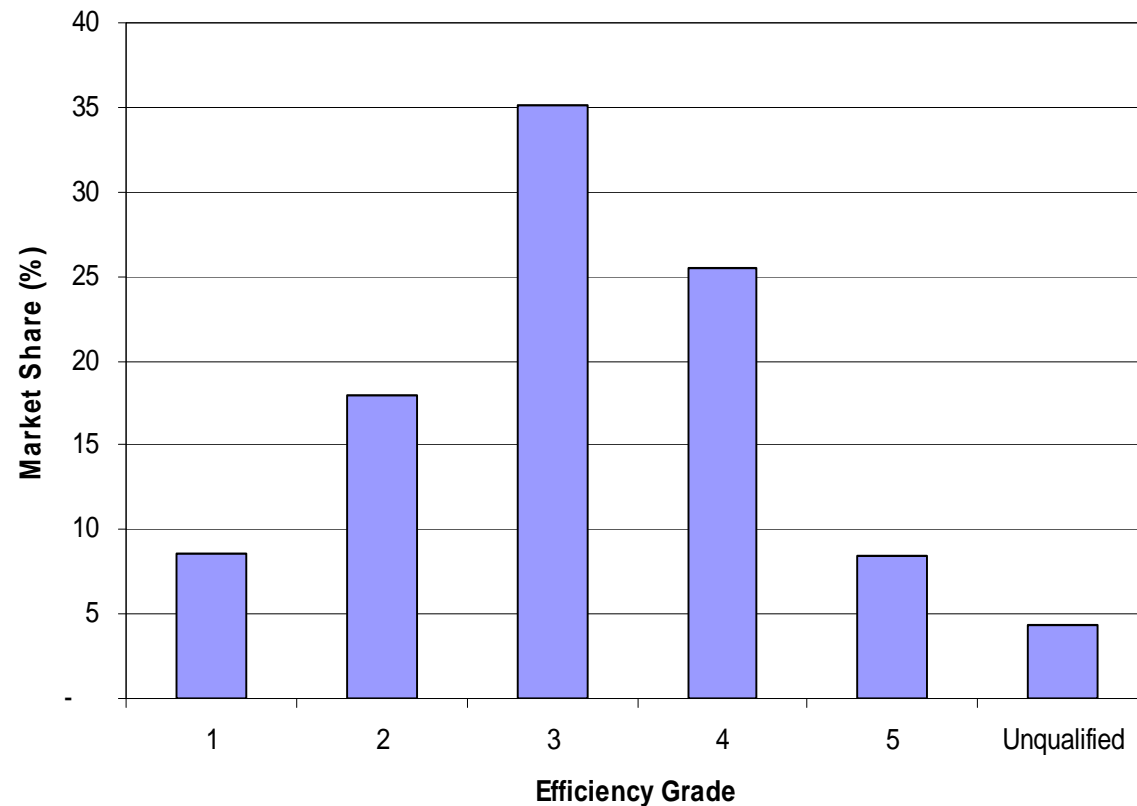
China Refrigerator Info Label: Specification Development and Potential Impact

New requirements to achieve grade 1 (the best) are virtually as stringent as those for US Energy Star-qualified or EU A-grade refrigerators.

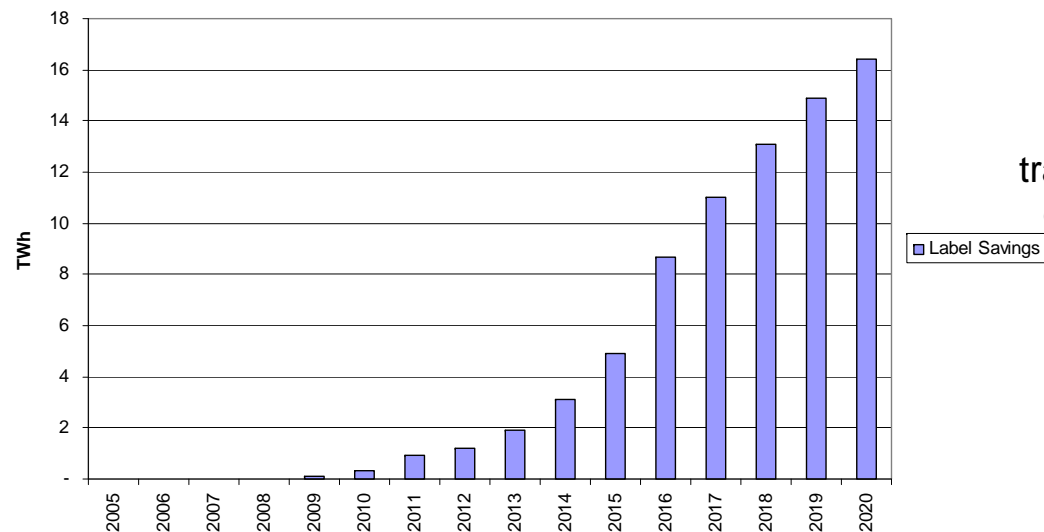


China Refrigerator Info Label: Specification Development and Potential Impact

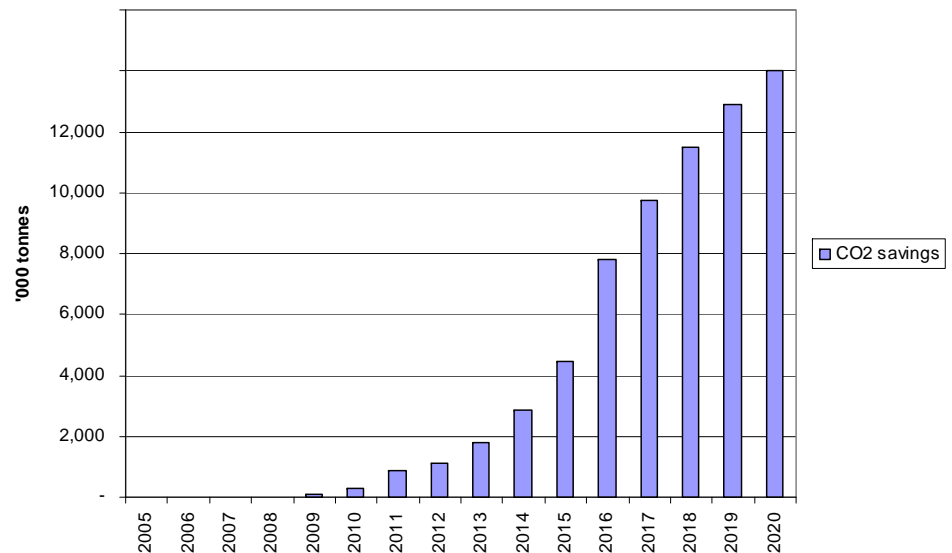
CLASP further provided assistance to CNIS to collect data on both the efficiency distribution and product volume distribution of refrigerators on the market.



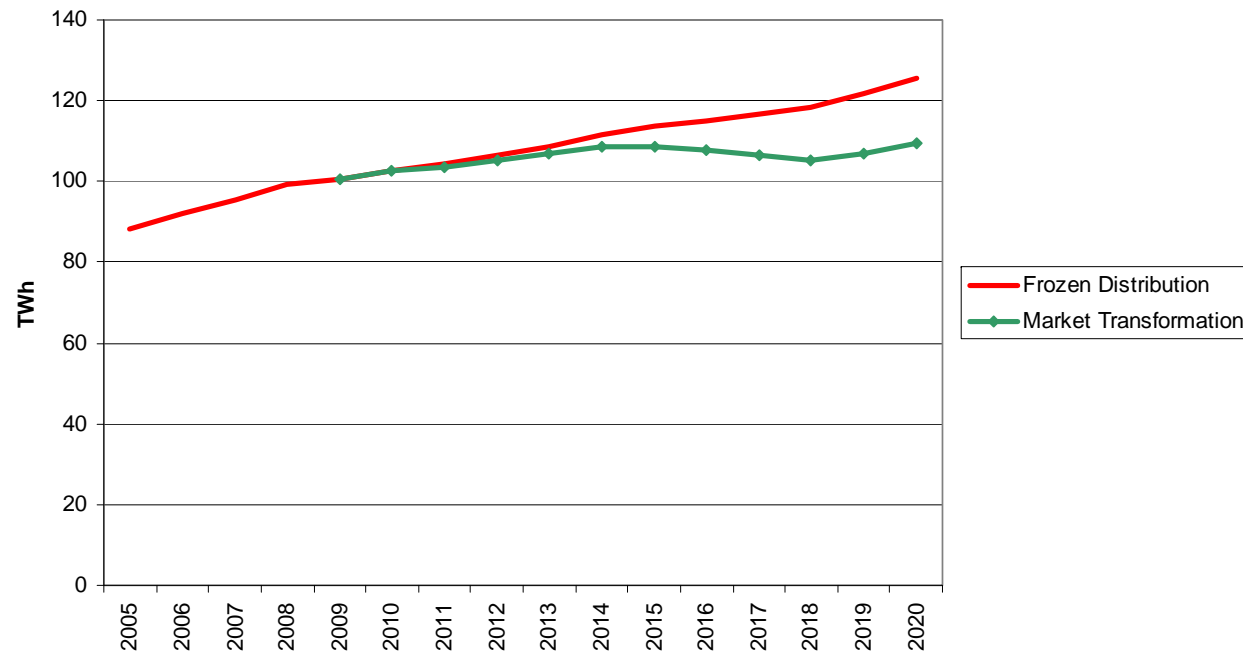
China Refrigerator Info Label: Specification Development and Potential Impact



CLASP provided CNIS assistance in estimating impacts based on the market transformation experience of the related EU energy information label. By assuming a parallel process unfolding in China, it is possible to look at the potential impact of the label to 2020.



China Refrigerator Info Label: Specification Development and Potential Impact



Market transformation effects of the label alone could flatten China's refrigerator electricity consumption even as total stock grows from 240 million in 2008 to 430 million in 2020.



Carbon Mitigation Potential (Electricity Only) Mt CO₂ in Targeted Asian Countries

Residential

COUNTRY	Lighting	Refrigeration	Space Cooling	Standby	Television	Water Heating	Space Heating	Fan	Laundry	Subtotal
CHINA	66	89	7.0	45	78	20	10	3.4	2.6	316
INDONESIA	7.1	12	0.8	4.2	10	0	0	3.0	1.4	39
INDIA	24	47	11	15	29	0	0	13	15	153
THAILAND	3.0	5.0	2.9	1.8	1.8	0	0	0.8	0.5	18
VIETNAM	2.8	1.8	0	1.9	2.4	0	0	0	0	10

Commercial

COUNTRY	Lighting	Office Equipment	Refrigeration	Space Cooling	Ventilation	Subtotal
CHINA	70	4.3	25	69	18	186
INDONESIA	4.2	0	1.3	8.8	0.9	16
INDIA	13	0.6	3.8	22	2.6	42
THAILAND	2.5	0	0.9	6.0	0.6	10
VIETNAM	5.4	0	1.9	12	1.5	21

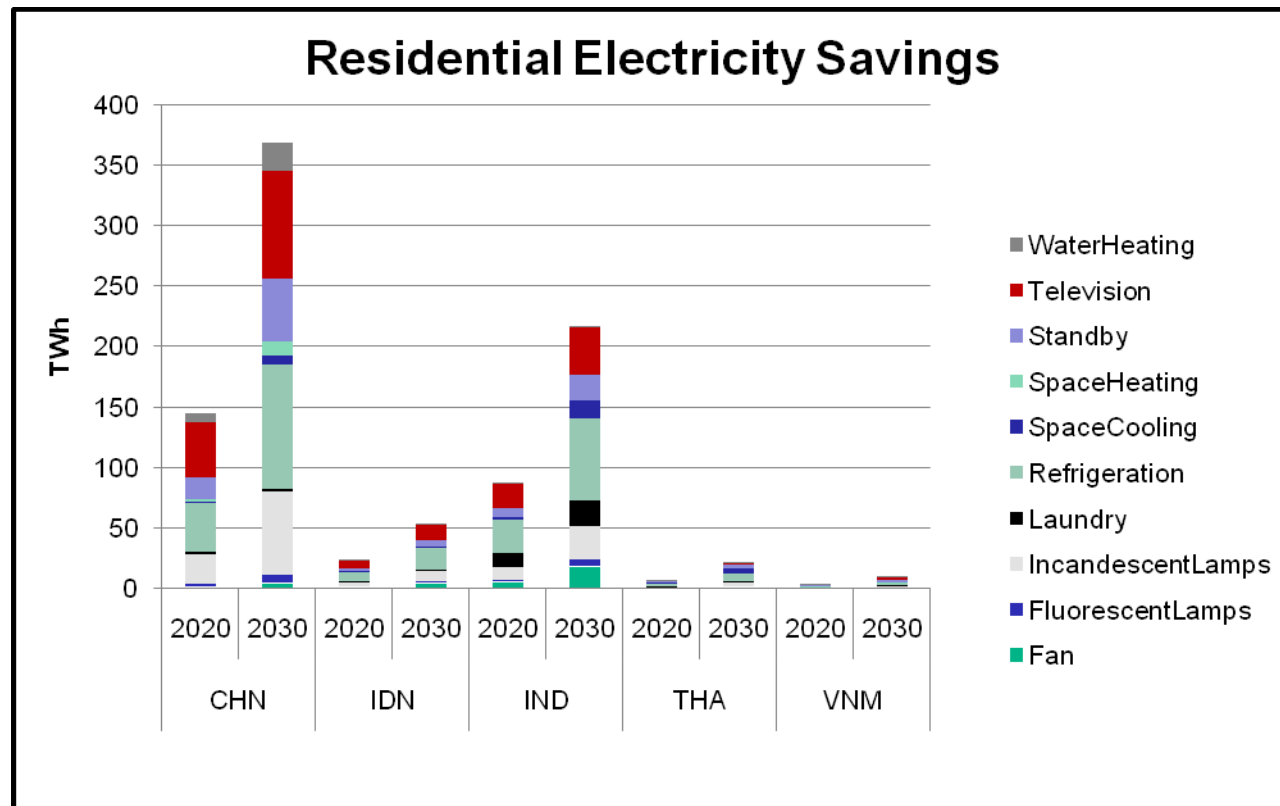
Industrial



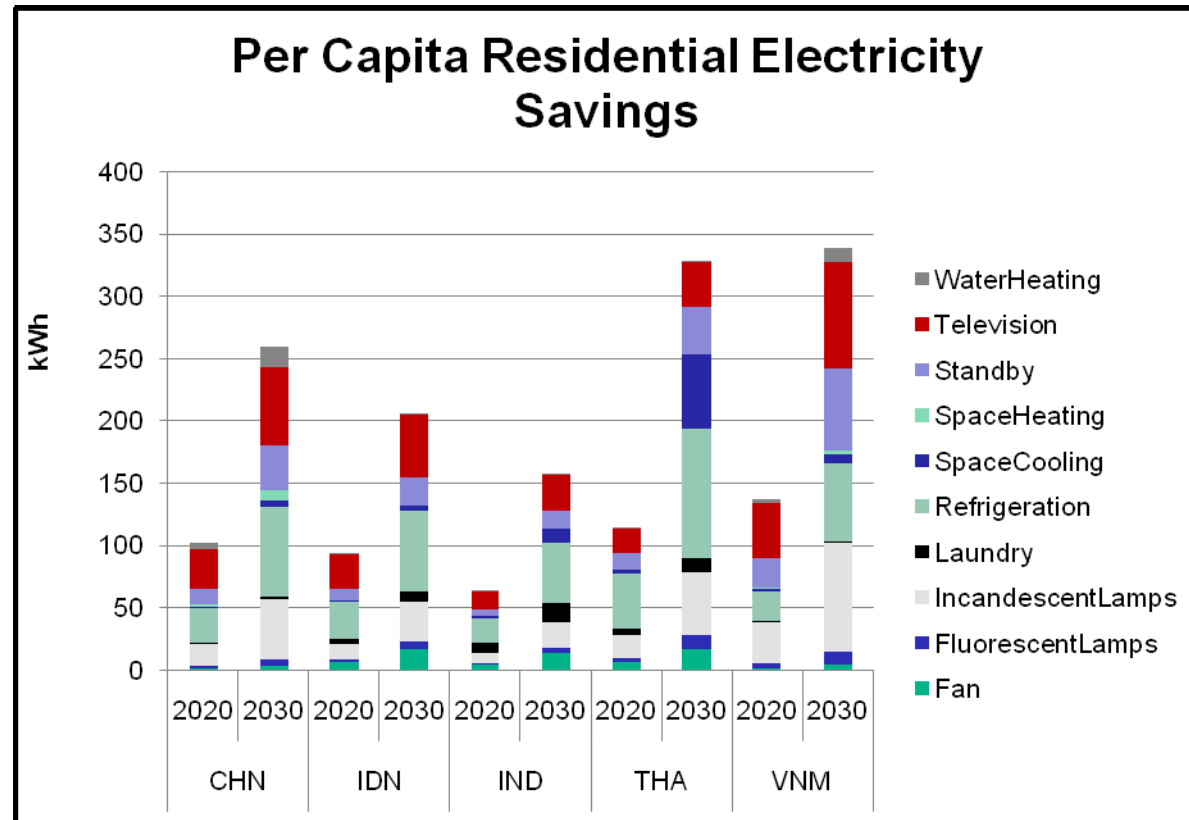
COUNTRY	Motors
CHINA	63
INDONESIA	2.1
INDIA	10.5
THAILAND	2.7
VIETNAM	2.1
TOTAL	80

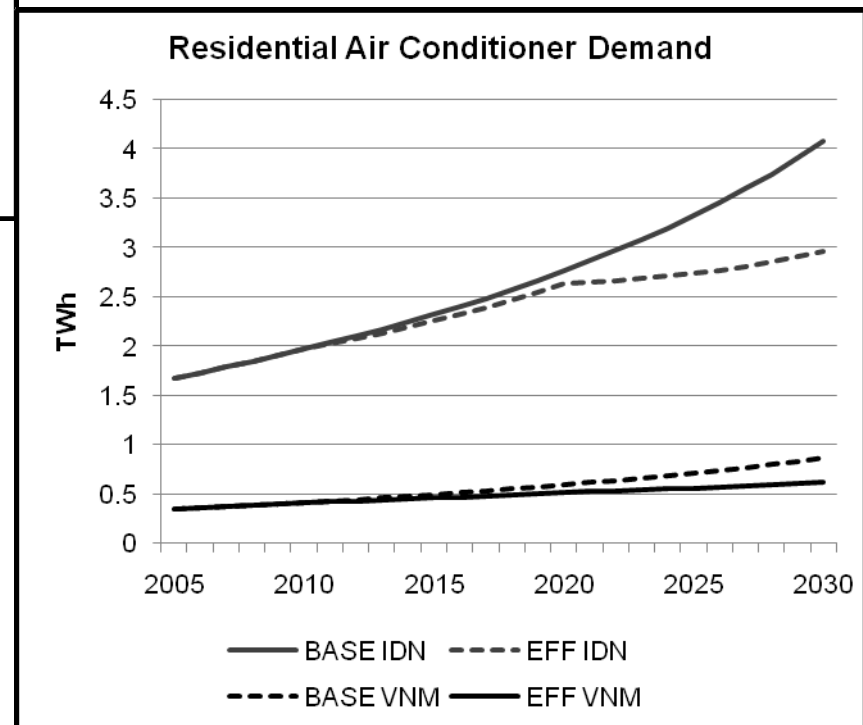
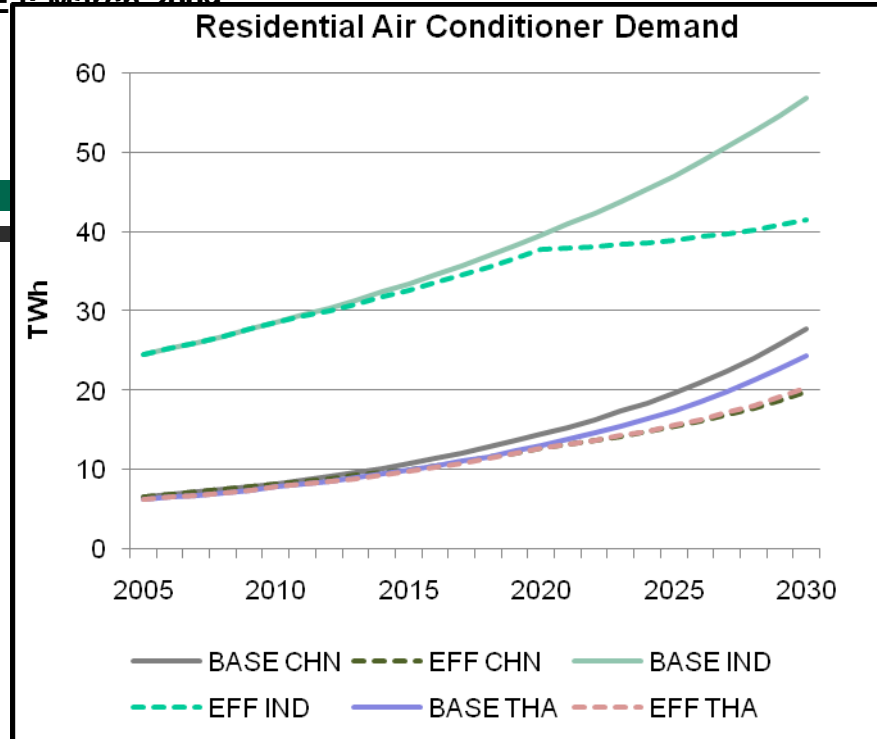
COUNTRY	TOTAL
CHINA	565
INDONESIA	57
INDIA	206
THAILAND	31
VIETNAM	32
TOTAL	892

Residential Electricity Savings (TWh) in Targeted Asian Countries



Per Capita Electricity Savings (kWh) in Targeted Asian Countries





Air Conditioner Efficiency Assumptions

COUNTRY	Base Case	2010 Standard	2020 Standard
	EER (W/W)		
CHINA	2.6	3.2*	4.0
INDONESIA	2.4**	2.6	4.0
INDIA	2.4	2.6	4.0
THAILAND	3.1***	3.2	4.0
VIETNAM	2.6****	3.2	4.0

*China “Reach” Standard 2009

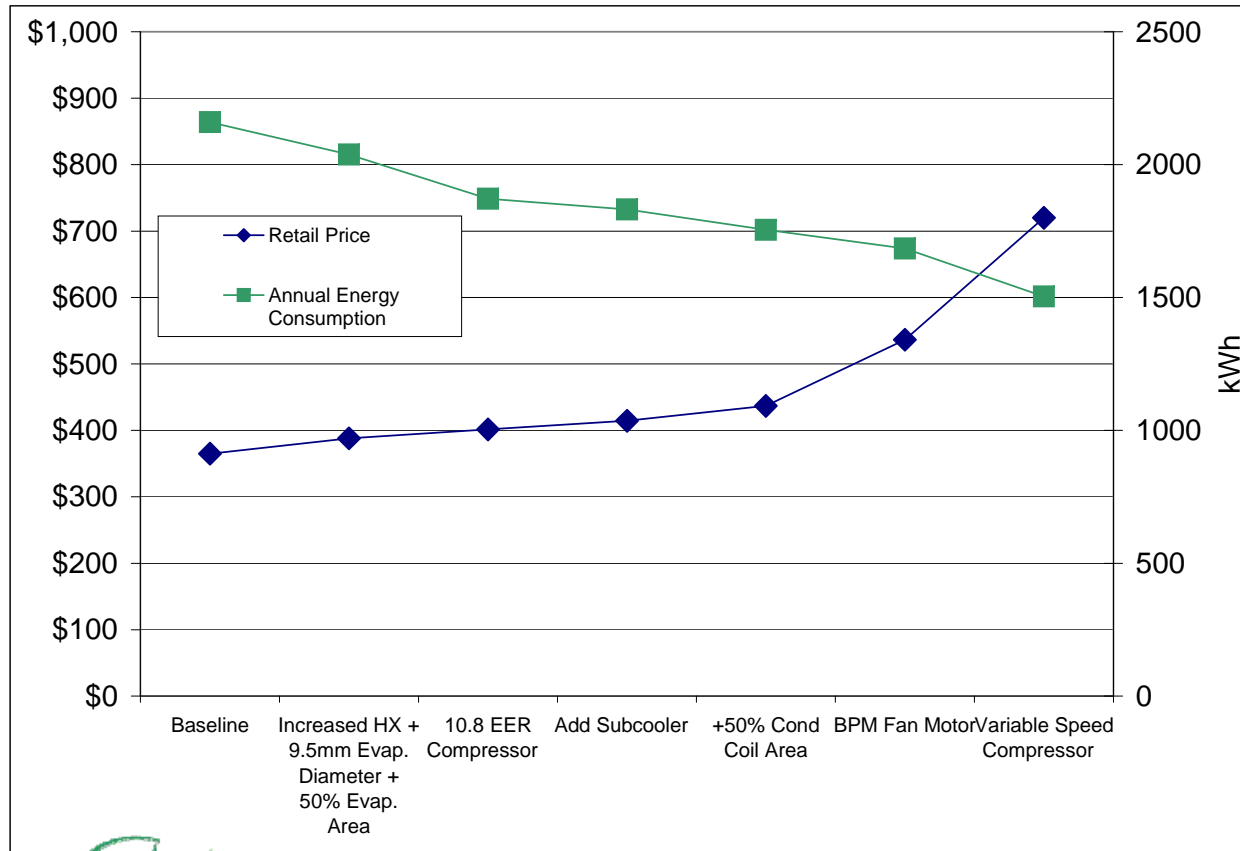
**Assumes Indonesia is same as India

***Based on Danish Energy Management (DuPont)

****Based on Data from Econoler International



Air Conditioner Market Impacts



The example from India shows that 20% reduction in energy consumption (from 2150 to 1750 kWh) results in a \$50 increase in retail price (from \$375 to \$425) per unit.



Estimate of Residential Air Conditioner Market Impacts (cont.)

COUNTRY	Stock 2010	Stock 2030	New Installations	Replacements*	Total Unit Sales	Added Revenue
	Millions	Millions	Millions	Millions	Millions	Billions
CHINA	71.9	186.0	114.1	251.8	365.9	\$ 18.30
INDONESIA	0.6	1.2	0.6	1.8	2.4	\$ 0.12
INDIA	8.2	16.2	8.1	25.6	33.7	\$ 1.68
THAILAND	2.2	7.0	4.7	8.4	13.1	\$ 0.66
VIETNAM	0.7	1.5	0.8	2.3	3.0	\$ 0.15

Total sales are estimated according to New Installations (uptake) and replacements (assuming all stock is replaced every 12 years).

Estimated market impacts (increased revenue) based on estimate of additional \$50 per unit, from India example



Some Assumptions...

- Only electricity is covered
- Electricity emissions (carbon factor) based on current regional averages, and assumption of 1% improvement per year
- Tiered MEPS starting in 2010, ratcheted in 2020
- Model of ownership rates calibrated to current values where data is available
- Air conditioner efficiency based on alignment with China 2009 reach standard by 2010 (3.2 EER), efficiency reached 4 EER by 2020.
- Per capita GDP growth rate of 5.6 % in China & Vietnam, 4.6% elsewhere

