Presentation 5

Energy Efficiency Bsed CDM Projects

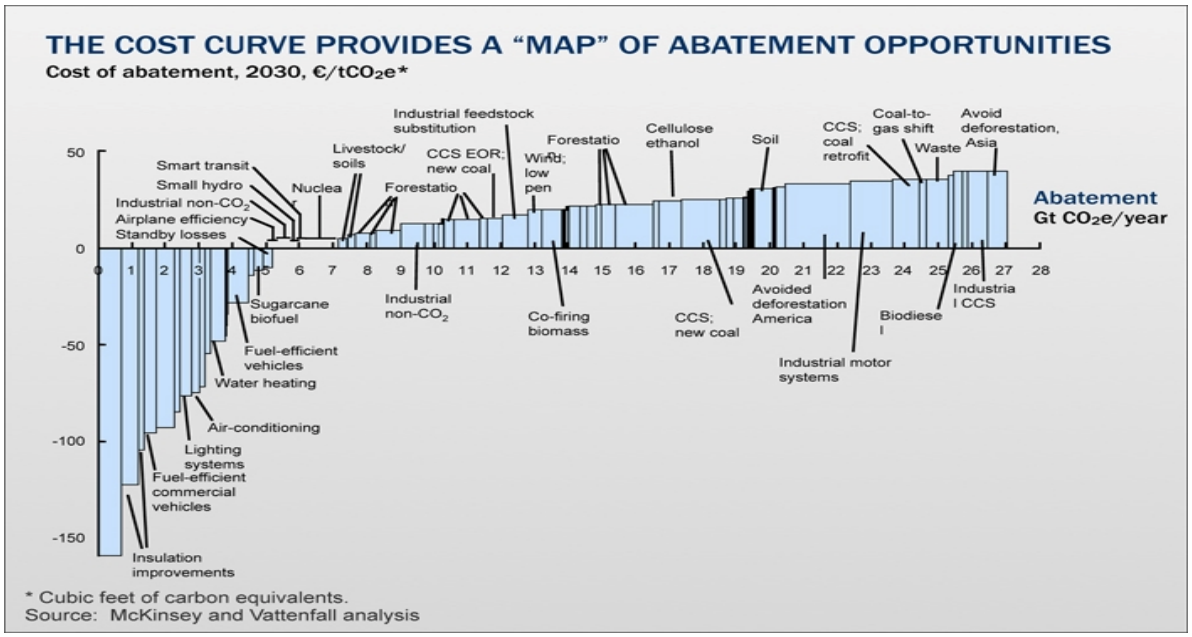
Atul Raturi

1.0 Introduction

Every time we save a litre of petroleum product or a unit of electricity, we help cutting down the GHG emissions. Energy efficiency is called the lowest lying fruit among energy generation /conservation activities. Until June 2011, 13% of the registered CDM projects dealt with supply side (9%) and demand side (4%) energy efficiency. Following table shows the number of registered EE based projects in India and China ,the two leading CDM countries.

Project	India	China
EE households	46	13
EE Industry	105	08
EE own generation	140	288
EE Service	19	0
EE Supply side	51	16

Figure below shows the cost of GHG abatement (Euro/tCO_{2e+}) for different interventions and it can be seen that EE based projects are clearly the least cost options.



2.0 Examples of EE CDM projects

2.1 Example I : Lighting efficiency project[1]

The Uttar Pradesh Lighting Energy Efficiency Project (ULEEP) is being implemented in Varanasi, Zone, Uttar Pradesh, India- and this is a small scale CDMProject Activity.

The objective of the project is to distribute 300,000 New self ballasted Compact Florescent Lamps (CFLs), at a price comparable to that of incandescent lamp (ICL). The project Involves return of ICLs in exchange for an equal number of CFLs.

The following table shows the technical specifications of the lamps .For the same lumen rating , a substantial saving in the energy usage is seen with the use of CFLs.

ICL Wattage	ICL Lumen Rating	CFL Wattage	Allowed/Target Lumen Rating of CFL	Net Saving /ICL
40 W	340	8W (40We ICL)	Min 340	32W
60 W	610	12W (60We ICL)	Min 610	48W
100 W	1230	20W (100We ICL)	Min 1230	80W

On average,the project will reduce 18,365 tonnes of CO_{2e} annually. The Additionality for this project was shown using the investment barrier. Without the CDM revenue , the project will result in a loss of more than 35.1 million Indian rupees (about 1 million USD).

2,2 Example II : Efficient cooking stoves [2]

This EE project deals with providing efficient cooking stoves to communities in the foothills and plains of Nepal. The methodology used is Type II AMS IIG. / Version 02 EB 51 “Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass". The baseline comprises the annual biomass usage per household and fossil fuel usage by a similar project. The annual emission reduction was expected to be 19899 t CO_{2e} / Year over accrediting period of 10 years. The only project funding was through carbon finance.

2.3 Example III: Improvement in energy consumption of a Hotel (SS CDM)[3]

This project aims at bringing efficiency measures both at the generation and demand side energy consumption by a new hotel unit and thus reduce greenhouse gases emissions attributed to the business activities being carried out within this hotel facility in India. The project has two components:

[1] PDD available at cdm.unfccc.int
[2] PDD available at cdm.unfccc.int
[3] PDD available at cdm.unfccc.int

a) Energy efficiency measures – generation side;

b) Energy efficiency measures – demand side

The methodologies applies were Type II – Energy Efficiency Improvement Projects -Project Category - II. B. Supply side energy efficiency improvements – generation- applicable to energy efficiency measures adopted at generation end of thermal energy (steam/ hot water) and, Project Category – II. E. – Energy Efficiency and fuel switch measures for building **–** applicable to energy efficiency measures adopted at consumption side of electrical energy.

The project activity consists of

- Installation of various frequency drives;
- Retrofit of existing heat, ventilation and air-conditioning (HVAC) system to reduce unwarranted moisture laded air load in the pre-cooled air unit (PAU)
- Retrofitting various pumps located at many site within the hotel facility;
- Enhancement of the treatment efficiency of the sewage treatment unit
- Replacement of electric water heater with solar alternative;

The project was expected to reduce 2,987 CO_{2e} in its 10 years crediting period. The additionality of the project was shown using the barrier analysis and prevailing practice.

2.4 Example IV : Potential EE CDM projects in the Pacific Island Countries

There is ample potential of starting EE CDM projects in the PICs. Some examples are:

- Efficient lighting (replacing ICLs with CFLs and LEDs)
- Improved cooking stoves
- Factory energy efficiency (dairy, brewery etc.)- e.g. Vapour Re-compression (VRC) and Heat pump in a brewery.
- Energy efficiency –Hotels, resorts
- Optimization of steam generation in FSC sugar mills

3. Conclusion

Energy efficiency can play a major role in reducing the GHG emission by cutting down the fossil fuel use. Programmatic CDM projects could be build around energy efficiency measure within larger countries (PNG, Fiji) and even across the region.