Clever cooperation will step up climate progress

In the first of a two-part series, **Michael Smith** and **Karlson Hargroves** discuss how cost-effective and mutually beneficial opportunities for OECD countries to assist fast-growing developing nations can appreciably reduce emissions in a new era of greater global cooperation.

At the UN Bali Climate Change summit in January, delegates from nearly 190 countries, for the first time, agreed to a negotiation process for both developed and developing nations which will result in commitments to measurable, verifiable steps to reduce greenhouse gas emissions by 2020. Rapidly industrialising nations such as China and Brazil pledged to account for their global warming contributions as long as developed nations shared clean technology and helped bolster their ability to respond to climate change.

It is now important that developed nations such as Australia and fast-growing developing countries identify new, cooperative climate change mitigation projects to build on the goodwill. Energy efficiency projects are a first priority and opportunity.

A recent 2007 study by McKinsey & Company has found that, through investing in energy efficiency, global emissions could be reduced by 20 per cent by 2020 without harming economic growth.[1] Countries such as China,[2] India[3] and Brazil are now making increasingly significant commitments to energy efficiency in recognition of the win-win opportunities. But there are still significant barriers to investment in energy efficiency in many countries, such as low awareness of the benefits of energy efficiency, finance reservations and the general lack of training amongst the global pool of engineers.

Yet there are already great examples of projects that have begun successfully to address these barriers from which both OECD and non-OECD countries can learn a great deal. The starting point is community awareness.

For example, since all citizens, organisations and government agencies need lighting, investing in energy efficient lighting is an ideal place to start to raise community awareness about the benefits of energy efficiency generally. Poland's Efficient Lighting Project (PELP)[4] is widely regarded as the model success story here.

In Poland in 1995, though economical in the long run, a compact fluorescent light globe (CFL) required an off-putting upfront investment of as much as US$15.00. An incandescent bulb cost just 40 cents. But under the Poland Efficient Lighting Project, OECD nations, through the Global Environment Facility (GEF),[5] committed $5 million to provide an incentive to Polish CFL manufacturers, wholesalers and retailers to help bring down the upfront cost of CFLs.

As a result, more than 1.6 million new compact fluorescent lights[6] were installed from 1995 to 1998. This increased the uptake of globes from one in every 10 homes to one in every three homes by 1998. By 2004, around one in two homes in Poland used a CFL and the project had saved an estimated 2320 gigawatt-hours of electricity – a reduction of 2.8 million tons of CO_2 emissions.

The GEF's incentives were carefully administered. CFL manufacturers had to engage in competitive bidding to be part of the program and this led to pledges of additional manufacturers' discounts. A manufacturer's discount of, say, 50 cents (US$), would mean that a GEF CFL price reduction incentive of $1.50 led to a total price reduction of $2.00. Importantly, negotiations with wholesalers and retailers ensured that they too adjusted their margins accordingly. If the original manufacturer's price was then $6.00, the price to the wholesaler was subsequently only $4.00. The wholesalers' and retailers' reduced markups, as well as value-added tax, were then also calculated on a lower original price. So instead of a manufactur-

1 McKinsey & Company (2007). Curbing global energy demand growth: the energy productivity opportunity. www.mckinsey.com/mgi/publications/Curbing_Global_Energy/index.asp
2 China Energy Bulletin, www.energybulletin.net/3566.html
3 India Bureau of Energy Efficiency, www.bee-india.nic.in/
4 Poland's Efficient Lighting Project (PELP), www.un.org/esa/sustdev/mgroups/success/2000/PCBCP-4.htm
5 The Global Environment Facility (GEF), established in 1991, helps developing countries fund projects and programs that protect the global environment. www.gefweb.org/default.aspx
6 CFLs last eight to 10 times longer than normal incandescent electric bulbs and consume only a quarter of the electricity.

Left: Shanghai nights. The 3CEE Project has helped warm local banks to energy efficiency initiatives. Alexander Yakovlev, istockphoto

Bottom left: New Delhi's old town. India's energy planners are realising the benefits of efficiency innovation. Simon Webber, istockphoto

Bottom right: A view of Gdansk, Poland. Proactive cooperation under the country's Efficient Lighting Project led to compact fluorescent globes in around 1 in 4 homes. Adrian Beesley, istockphoto

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er's price of $6.00 resulting in a retail price of $12.00, a manufacturer's adjusted price of $4.00 led to a sales price of only $8.00.

Of course all this required the initial commitment of US$5 million, 13 years ago, but it illustrates the power of the mechanism. There has also been a significant fall in CFL costs over that time to consider.

Such was the success of this program that the GEF then funded the $15 million dollar Efficient Lighting Initiative (ELI) from 2000–2003 to foster the efficient lighting market in Argentina, the Czech Republic, Hungary, Latvia, Peru, the Philippines and South Africa.[7]

There is a significant opportunity for OECD countries to fund similar energy efficiency incentive schemes through the GEF to overcome the barrier of higher upfront investment costs and thereby encourage more countries to adopt energy efficient products and services.

Meanwhile, the 3 Country Energy Efficiency Project (3CEE)[8] – involving China, India and Brazil – has run from 2002 to 2006 to address barriers to lack of local investment in energy efficiency.

'Many energy efficiency projects quickly pay for themselves, with typical returns on investment of 20–40%,' says Chandra Govindarajalu, a senior World Bank environmental specialist working with the 3CEE program. 'Despite the demonstrated benefits, though, companies often cite other, more immediate investment and borrowing priorities. Meanwhile, commercial banks in these countries are generally unfamiliar with financing projects designed to achieve cost savings, rather than develop new product lines or other tangible assets.'[9]

To address these issues, the 3CEE Project has worked with the banking and finance sector to promote energy efficiency projects. It is a joint initiative of the World Bank, the UN Environment Programme's Denmark-based Risoe Centre (URC), and partners in Brazil, China and India.[10]

World Bank consultant Jeremy Levin, who worked on the project, said, 'Because Chinese commercial banks were wary of making any investments that weren't practically guaranteed, the World Bank effectively co-signed the loans from the banks to Chinese "Energy Efficiency Service Companies" for up to 90% of the loan amounts. In the end, the World Bank guaranteed US$36.4 million in loans over 52 projects, which resulted in energy savings that cut 102 700 tons (93 100 metric tons) of Chinese carbon dioxide emissions per year.'

The 3CEE Project has been instrumental in making local banks recognise the soundness of investments in energy efficiency projects. It's a matter of getting the first couple of loans going. With wider uptake, confidence in the mechanism grows and barriers to financial facilitation for such projects reduce.

As more countries commit to stronger energy efficiency targets, and different avenues for cooperatively reducing emissions are found, there will be a great need for more expertise to assist with developing the mechanisms. In our next article we will examine cooperative models to overcome barriers to investment in renewable energy and sustainable transport projects in fast-developing countries. In the meantime, CSIRO has led in this skills area by funding *Energy Transformed: Sustainable Energy Solutions for Climate Change Mitigation*, a freely available education and training suite in energy efficiency, renewable energy and sustainable transport.

More information:
Global Environment Facility: www.gefweb.org/default.aspx

Smith M, Hargroves K, Stasinopoulos P, Stephens R, Desha C and Hargroves S (2007). *Energy Transformed: Sustainable Energy Solutions for Climate Change Mitigation.* The Natural Edge Project, Australia. www.naturaledgeproject.net/Sustainable_Energy_Solutions_Portfolio.aspx

7 International Finance Corporation Efficient Lighting Initiative, www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/p_ELI/$FILE/ELI_FINAL.PDF
8 3 Country Energy Efficiency Project, http://3countryee.org/
9 UNEP (2006). Fighting climate change through energy efficiency. http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=477&ArticleID=5276&l=en
10 The UN Foundation and the World Bank Energy Sector Management Assistance Program provided financial support, with complementary activities supported by the Asia Alternative Energy Program and the UK Department for International Development.