



GTZ Workshop Report

Policy and Market Development for SP&S in Developing Countries

Project Resource Efficiency & Urban and Industrial Environmental Management
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Section 4703 – Environment, Resource Efficiency, Solid Waste

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The GTZ Workshop “Policy and Market Development for Sustainable Products and Services in Developing Countries” was part of the International Conference “The Future of Sustainable Products and Services”, which took place from 28th – 29th of September 2009 in Essen, Germany. The conference was organised by the UNEP/ Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production (CSCP) in partnership with Wuppertal Institute, Effizienz Agentur NRW (EFA), ecosign and GTZ.

1 Workshop Concept

Due to policy framework changes which have stimulated shifts in consumer behaviour, the demand for sustainable products and services in OECD-countries is increasing at a high rate of growth. This process can be observed also in developing countries, mainly in emerging or new industrialized economies. However, the conditions in these countries for a rapid market development are quite different than in the developed OECD-countries because incentives for consumers to move towards more sustainable lifestyles are usually considerably less significant. Additionally, widespread poverty gives big shares of the population only limited purchasing power.

Consequently the workshop addressed the questions of what can or should be done to overcome the constraints in developing countries for an accelerated market development for sustainable products and services and what actions are required so that not only the middle class but also the poor can afford and benefit from those products and services?

The discussion concentrated on two cases: dissemination of energy saving lamps in India and distribution of high energy efficient refrigerators to the urban poor in Brazil. In both cases the underlying idea was to create an additional incentive for producers and consumers to shift to sustainable products by using the international financing mechanism CDM. The workshop explored how these projects are related to the energy policy of both countries as well as to the development strategies of the relevant national and international stakeholders. By bringing together representatives of these stakeholders there was the chance to engage within a South-South-North “trialogue”.

The main goal of the Brain Lab was to provide participants with an opportunity to understand and explore opportunities to develop markets for sustainable products and services in emerging or new industrialized countries and in particular to explore mechanisms to enable access to these products and services to low income groups of society.

The key questions of the workshop were:

1. What are the main differences between **market conditions** for SP&S in OECD- and developing countries?
2. What can or should be done to overcome **market constraints** for SP&S in developing countries?
3. Which **policy instruments** (e.g. regulations, economic incentives for DSM...) are most effective to make sustainable products more competitive and what is the specific role of CDM in this context?
4. What is necessary in order to ensure that energy- and resource-efficient products are also **sustainable products**?
5. Which measures are required for making sustainable products affordable for the **poor**?
6. Are there **common interests** between the different stakeholders – how can they be organized in favour of SP&S?

2 Workshop Programme

| | Hour | Step | Lead |
|--|---------------------------------------|--|--|
| First Block 12:45 - 15:00 | 12:45 | Welcome address and introduction | Detlev Ullrich, GTZ Moderator (Dirk Jung, Denkmodell) |
| | First Movers' Experiences | | |
| | 13:00 | Energy Efficient Refrigerators – Utility Perspective (national energy policy framework, incentives and disincentives, access for the urban poor) Q&A | Antonio Carlos da Costa Pinhel, Neoenergia, Brazil Moderator |
| | 13:30 | Energy Efficient Lamps (CFL) – Government Perspective (national energy policy framework, incentives and disincentives, access for the urban poor) Q&A | Vandana Thakur, BEE, India Moderator |
| | 14:00 | Dialogue Panel <ul style="list-style-type: none"> • Introduction and questions from the audience • Discussion (comparison: differences, similarities, open questions) | Moderator Speakers (Brazil, India), Thomas Grammig, GTZ-Proklima |
| 15:00 - 15:45 Break | | | |
| Second Block 15:45 - 18:00 | Manufacturers' Business Models | | |
| | 15:45 | Introduction second block | Moderator |
| | 16:00 | Energy Efficient Refrigerators – Private Company Perspective (corporate sustainability strategy, market strategies for DC, market constraints, regulations and incentives) Q&A | Samuel Shiroff, BSH, Germany Moderator |
| | 16:30 | Energy Efficient Lamps (CFL) – Private Company Perspective (corporate sustainability strategy, market strategies for DC, market constraints, regulations and incentives) Q&A | Christian Merz, Osram, Germany Moderator |
| | Policy and Market Development | | |
| | 17:00 | Dialogue Panel <ul style="list-style-type: none"> • Introduction and questions from the audience • Discussion (main statements, conclusions, open questions) | Moderator Speakers (Brazil, India, Osram, BSH), Norbert Reintjes, Ökopool |

3 Introduction Speech by Dr. Detlev Ullrich, GTZ

When Michael Kuhndt, Head of CSCP, asked me one year ago whether GTZ would be interested to jointly organize an international conference on sustainable products, my spontaneous answer was “yes”. The reason why I immediately agreed is that in the frame of development cooperation (DC) we use to talk a lot about sustainable development and the ways how to achieve it, but rarely about sustainable consumption. At a first glance, this might appear astonishing because, at the end of the story, development is driven by needs (by the way: not in the narrow sense of basic needs) and growth is driven by demands. That means: demands for products and services. The traditional role of DC, however, is to strengthen the productive capacities of societies and to improve the supply with basic goods and services in order to meet the needs of the poor, but not to contest, and much less to change the consumption patterns arising as a result of economic growth.

Yet, there is another reason: When, approximately 15 years ago, we started to extend DC to the emerging environmental organisations in developing countries of that time, we had to address the same environmental problems there, that we have had experienced in our own country: severe pollution-related health problems, mainly in the large urban agglomerations, which completely attracted the attention of our partners. They started there where environmental policy generally starts: by targeting the improvement of air, water and soil quality, while not caring about resource use and flow along the whole production and consumption cycle.

Although many of the pollution problems in developing countries are still waiting for a solution, environmental cooperation cannot continue to address local problems only. Climate change forces us to change the focus and to look for links between local and global agenda.

In order to get some inspiration how to deal with this challenge, let's have a look at the EU Resources Strategy issued in 2003. As many of you might know, the overarching goal of this strategy is to contribute to the decoupling of resource-related environmental impacts from economic growth by:

- Using more efficient and cleaner technologies
- Changing the pattern of consumption so that some specific resource uses are reduced
- Using less of a resource to protect it and to alleviate impacts from its use.

In the past, we used to blame industry for most of the environmental impacts, as we linked these impacts to the production sector. We could do so because production and consumption are entirely separated areas. Due to this separation it was perfectly possible to produce “dirty” products while using “clean” technologies. The responsibility of the producer simply ended at the border of the factory.

This way of thinking and acting becomes more and more obsolete. Changes are induced by:

- Policies and Regulations with regards to products and product responsibility. Examples are the Integrated Product Policy of the EU which aims to reduce the environmental impacts of products and services throughout their life-cycles, and the EU Directive on Energy-Using-Products, both shaping “green” markets.
- Economic incentives to manufacturers, providers and consumers of sustainable products and services.
- Demand-side management. This approach is particularly important for fostering energy efficiency. To give an idea: In the case of electrical appliances, 90 to 95% of the environmental impacts (mainly direct and indirect CO₂ emissions) are caused during their period of use.
- Corporate sustainability strategies. Today, it is almost a must for all big companies to have a sustainability strategy, not only for refurbishing their public image but also for economic reasons. As Siemens states: “Innovative products and new services offer the best chances to be economically successful in a globalized world.”
- Growing environmental awareness of the society. This is leading to shifts in consumers' preferences, making green products more competitive.

Due to all this, the demand for sustainable products and services in OECD-countries is increasing at a high rate of growth. This process can be observed also in developing countries, mainly in emerging or new industrialized economies. However, the conditions for a rapid market development in these countries are quite different from those in the developed OECD-countries because incentives for consumers to move towards more sustainable lifestyles are usually considerably less significant.

Additionally, due to widespread poverty big shares of the population have only very limited purchasing power.

Consequently the workshop will address the following questions: What can or should be done to overcome the constraints in developing countries for an accelerated market development for sustainable products and services? What actions are required to achieve that not only the middle class but also the poor can afford and benefit from those products and services?

The presentations will concentrate on two cases: dissemination of energy saving lamps in India and distribution of high energy efficient refrigerators to the urban poor in Brazil. In both cases, the underlying idea has been to create an additional incentive for producers and consumers to shift to sustainable products by using the international financing mechanism CDM. And in both cases GTZ provided technical advice with regard to project design and methodology.

You will have the chance to meet and discuss with representatives of the most relevant stakeholders involved in these projects, namely:

- Mr Antonio Pinhel, New Business Development Superintendent at Neoenergia in Brazil
- Ms Vandana Thakur, Manager of BLY from the Bureau of Energy Efficiency in India
- Mr Samuel Neal Shiroff, Business Development Director at BSH
- Mr Christian Merz, Director of Sustainability at OSRAM.

I welcome our guests and say thank you for sharing your experiences with us.

4 Workshop Summary by Thomas Grammig, GTZ Proklima

4.1 Introduction of high-efficiency refrigerators in low-income households in Brazil

Antonio Carlos da Costa Pinhel, director of new business development with Neoenergia, the corporation owning three utility companies in Northeastern Brazil, presented the first large scale exchange programme of refrigerators for low-income households. The basis for this programme by Coelba is the legislation from ANEEL, a regulator created during the privatization of the former national monopolist Eletrobras in 1998. ANEEL first left it to each utility to decide where and how to invest 0.5% of the net income in efficiency, in generation, in distribution or in demand efficiency. Such a “wirecharge” is commonly advocated but rarely implemented. While utilities are reluctant to spend funds without any possibility to thereby affect their profitability, Coelba sought to rectify its uneven client base. 55% of Coelba’s clients are low-income households and theft and non-payment of energy can range between 10% and 50%. Both add to significant power losses because of the damaged electricity grid, a general expression of a public order situation. Coelba estimates that 2 mio households in the favelas of Salvador, Bahia are eligible for this exchange programme.

Between 2004 and 2008 Coelba exchanged 17.000 refrigerators and 60,000 light bulbs. Each household is treated separately so that its consumption is stabilized below 80kWh per month. This makes them eligible for a highly subsidized electricity rate that brings the bill down below 40 Reais per month, a level of less than 4% of household income, where it is affordable for average Favela households. Coelba gives preference to highly efficient refrigerator models manufactured in Brazil that do not use ozone-depleting substances (ODS), chlorofluorocarbons or hydrochlorofluorocarbons (CFC and HCFC, or F-gases in the jargon). Coelba has submitted this exchange programme as a CDM project in order to use the additional income to pay for the higher cost of the most efficient appliance.

Although there is no policy or other support from ANEEL for such demand reduction efforts (DSM), Coelba expands this programme because its benefits besides regularizing customers are significant. Low-income households in general consider efficient appliance, or any new appliance beyond their reach, even so the simple payback is below 3 years, their cashflow constraint is too severe. The demonstration effect of the efficient refrigerators spills over to other households and other appliances. Besides the technological jump from lowest to highest efficiency, the success rests on the continued service to households from “Agente Coelba”, locally recruited social workers, providing advice on appliances and bills so that the households’ benefits are maximized. Antonio Pinhel then showed a promotional video that highlighted the poverty level in the Favelas of Salvador, Bahia, and the appreciation by the household members, that in a way underlines the corporate social responsibility effectiveness of the programme.

4.2 Bureau of Energy Efficiency (BEE) exchange programme for CFL in India

Mrs Vandana Thakur from the Indian Ministry of Power's BEE introduced a scheme to distribute 400 mio. CFL across India, the "Bachat Lamp Yojana" (BLY). This is one of four dimensions of the National Mission for Enhanced Energy Efficiency, the others being efficiency certificates trading among industry, financial assistance for utility DSM and fiscal instruments for energy efficiency. As a top-down instrument the CFL programme starts from a macro objective, a reduction of demand by 6 – 10,000 MW. Size and scope of the National Mission illustrate the large power shortfall in the range of 9% of total generation in India. BEE funds this scheme from the global carbon market by selling the Certified Emission Reductions (CERs) generated when the scheme is approved as a CDM project under the Kyoto Protocol. The Indian government is not the first to do this, but the first for light bulbs and the first on such a scale. BEE provides the monitoring means required for the CDM part and oversees and approves the commercial agreements between Indian utility companies and the CFL manufacturers.

Mrs. Thakur underlined the overall market transformation goal, the elimination of all incandescent light bulbs from the market. To achieve this scale, BEE combines the exchange of the bulbs with a new CFL quality standard and standard enforcement infrastructure, as well as awareness raising and educational programmes.

BEE functions as the "Coordinating Entity" for the "Programme of Activities" (PoA), a new format for CDM projects, which allows BEE to implement Indian energy policy within the regulations for these CDM projects. To incentivize Indian utility companies to organize the light bulb exchange in their concession areas, BEE offers to provide the monitoring of the energy savings. BEE specifies a uniform format, each household can receive two CFL if it hands in two functioning incandescent light bulbs and pays for the CFL what they would have to pay for incandescent ones. Savings depend on the number of hours the CFL are used and the monitoring therefore uses specially designed pluggable hour meters. BEE provides the infrastructure for the data management to be used by utilities.

While BEE thereby assures the accuracy of the energy savings and the resulting Certified Emission Reductions (CERs), it can also control the sharing of the CER proceeds among the utility companies and manufacturing companies. This effectively combines the energy policy with the appliance market transformation in a novel way, rendered particularly forceful because of the scale of the BLY.



Pic. 1: Mrs. Vandana Thakur from BEE presenting the BLY Project

4.3 Dialogue Panel

Questions from the audience concerned the formats for awareness campaigns and the conditions for households to participate in Bachat Lamp Yojana. Mrs Thakur explained also that the Bachat Lamp Yojana would be replicated in irrigation for agriculture since there lies the highest energy conservation potential.

Comparing Coelba and BEE, it was suggested that they are alternatives in a number of parameters. Both are interested to use income from carbon markets to expand the introduction of high-efficient appliances but under quite different national energy policy conditions. BEE chose a top-down approach to offer fixed light bulb exchange rules to Indian utility companies. In the absence of national regulations, Coelba chose a bottom-up approach where selected households in a low-income area get an open offer. Independent of the energy policy difference, the particular conditions for utility de-regulation and privatization in the two countries are equally important.

In both cases, the possibility to use income from carbon markets depends upon utility companies. Their incentives and political will to do so are thus central. When Coelba is a representative one, then utilities, left to their own (by ANEEL's absence) can use CDM to change markets via appliance qualities, low-income households and high efficiency appliances bring them the most reputational return and most impact on the non-payment problem. The audience did not query whether Coelba has a particular characteristic that would set it apart from other utilities. Also potential influence from privatization policies and social policies were not discussed.

4.4 Bosch/ Siemens Haushaltsgeräte investment in CDM project development

Samuel Shiroff, director for carbon business, started by challenging the audience to question the distinction between appliances and services. Bosch/Siemens Hausgeräte (BSH), sees itself as a manufacturer who can design business models where services rendered by appliances are variable depending on household choices. For the Brazilian refrigerators of Coelba, BSH designed a business model that included recycling of old refrigerators because the old models contain ozone-depleting substances (ODS) and thus offer an opportunity for added value to BSH's customers, the utility companies. To make this commercially viable, BSH undertook a public-private partnership with GTZ to create a CDM methodology specifically for refrigerators in low-income households. The success of this business model rests on the cheap and easy-to-use CDM methodology requiring a life-cycle boundary for calculating the emission reduction, and a significantly more efficient refrigerator than those currently sold. The most efficient models sold in Brazil consume 24 kWh per months, the model for the CDM project only 15 kWh per month, or 37.5% better than the present top model. This allowed BSH to capture more than 50% market share of refrigerators sold to utility companies in Brazil.

Being able to develop CDM projects, offering the logistics of moving the refrigerators, monitoring for the emission reduction calculation and guaranteeing highest standard recycling, is for the BSH business strategy another service it can offer, all targeted at tapping carbon markets for the utilities. The division of roles between BSH, utilities (or government), recycling business and Favela organizations is variable. Screening all countries for refrigerator age distributions, energy mix and usage of ozone-depleting substances, BSH sees China, India, Turkey, Mexico and South Africa as the most promising countries to replicate the Coelba case.

To illustrate this approach, Mr. Shiroff presented the case of a plant oil cooker, called Protos, that replaces the kerosene stoves dominant in many developing countries. There BSH chooses local manufacturers and distributors, leaving for itself only the production of the burner of the cooker (a single piece of copper pipe) and the CDM project preparation.

4.5 Osram Initiatives in Developing Countries

Christian Merz, director sustainability, placed Osram's business strategy squarely into climate change. Lighting accounts for 19% of global electricity and using efficient lamps can reduce this by one third. Consequently, Osram was the first appliance manufacturer to invest in CDM projects and had to pay much "Lehrgeld". Its CDM methodology for lamps (AM046) was costly to produce and get approved but turned out to be too difficult to apply. Instead of Osram's methodology an alternative one developed by the World Bank, AMS II.J, particularly aimed to serve as Demand-side Management tool, is becoming the methodology of choice for light bulb exchanges (also by BEE). Osram found a

natural ally in BEE, and cooperated in various forms with BEE to create the large scale light bulb exchange programme. Mrs Thakur from BEE stressed that the most important help from Osram to BEE has been to allow BEE to learn how to relate to manufacturers in general. Taking the competition between manufacturers into account and using it for Indian policy was something that BEE had to gradually discover. It was for example unforeseen that manufacturers would engage in strategic alliances with CDM investors (such as between Osram and RWE). Osram found an important role in the CFL exchange as a provider of training for utility staff and NGO staff involved in the CFL exchange operation.

Osram considers itself a quality leader among manufacturers, but this is evident mostly in the lifetime of CFLs, 15,000 hours versus 3 - 6,000 hours for Chinese CFLs. However, in order to translate the quality advantage into a factor for competitiveness in relation to CDM projects, Osram needs to make sure that the higher quality effectively appears in the CDM accounting for the electricity savings. The particular problem for CFL is that the consumer has no possibility to distinguish high from low quality CFL when making a purchase decision. Even in Europe the presence of low quality CFL in the market varies between 5 and 30 % from one country to another. Mastering the mechanics of CDM projects is one way for Osram to get competitive advantage from the product quality but Osram also sees the need for joint efforts to overcome cost barriers. Osram and its competitor Philips are the major contributors to a GEF/UNEP programme "Global Market Transformation for Efficient Lighting Platform," a new public-private partnership with a 20 mio US\$ budget, directed at reducing global energy demand for lighting by improving CFL penetration in each country with specific tools.

In an evident parallel to BSH, Mr Merz showed how Osram seeks to tap into the potential market that does not have access to electricity, 1.6 bn people dependent on fuel-based lighting. As for the Protos cooker, kerosene is the fuel which Osram seeks to replace in an off-grid lighting pilot project in Uganda. Osram rents batteries with integrated lights to users, who recharge them at "Energy Hubs" with solar energy. This reduces the cost by half compared to kerosene for the same lighting service. Osram will invest 2 mio US\$ in testing this business model. This is of interest to BEE since more than half of all Indian households use kerosene for lighting.

4.6 Triologue Panel

Questions from the audience concerned especially the possibility for BSH and Osram to design products for developing countries. Mr. Merz stressed that highest quality CFL are also suitable for India since they withstand the voltage fluctuations better, thus denying that Osram would have a real case for developing country products. Others in the audience insisted that there are differences in the service users derive from appliances that can be design criteria. Mr. Shiroff reiterated that the adaptation lies more in the business models than in the products. When the discussion touched on differences in production costs, neither Osram nor BSH could comment.

Mr. Norbert Reintjes from Ökopool stressed that the successful market transformation for household refrigerators in the EU was supported by a mix of Sustainable Consumption and Production policies. While the efficiency labeling was the same in all European countries, one country used a rebate scheme enabling retailers to distribute most efficient models, where another country relied purely on awareness raising, and so on. Market transformation depends on the institutional setting underlying supply and demand. Taking Coelba's and BEE's very different CDM designs as indication, CDM projects can be used as financial contributions in different institutional settings.

Both Osram and BSH have learned that their technologically advanced products have to be combined with recycling services and with carbon market services in order to enable utility companies to convey these benefits to their customers. This is just as valid for the CFLs where overall costs can be as low as 5 US\$ per ton of CO₂ as it is for refrigerators with costs above 100 US\$ per ton. Both see CDM as a potential competitive advantage over lower quality producers but this potential is not as predictable as they first assumed.

From the Brazilian side, the Indian case is revealing for the shortfall of energy policy in Brazil, where ANEEL does not react to the utilities' efforts to expand their DSM with income from the carbon market. Without changes in the utility regulation in Brazil even the most skilfully designed CDM projects will remain dependent on limited subsidies for low-income households available but this will not deter Coelba from re-designing its current CDM project and upgrade it to a PoA CDM like BEE has. Mr. Pinhel felt that in the Brazilian context it was unrealistic to expect any government agency to put itself in an intermediary position such as BEE did between utilities and manufacturers.

From the Indian side, the Brazilian case indicates CDM projects that complement the Bachat Lamp Yojana. It is too early to conclude whether the market transformation intention is realistic, esp. because the accords between utilities and manufacturers are new and uncertain (obviously Osram would not comment critically). Mrs Thakur asked whether there is a rule for CDM that would in principle exclude getting carbon market income for households that did not yet use lighting or refrigeration. Indeed one such CDM project exists for light bulbs. However, more guidance for such baselines is not available. In the Indian context this is relevant because of the energy transition process where fuel switching occurs on a large scale.



Pic. 2: Trialogue Panel (from left to right) Vandana Thakur (BEE, India), Christian Merz (Osram, Germany), Samuel Shiroff (BSH, Germany), Antonio Carlos da Costa Pinhel (Neoenergia, Brazil), Norbert Reintjes (Ökopol, Germany).

5 Annex (Speakers' Presentations)

The presentations are available on request. In order to receive them, please send an e-mail to enrico.rubertus@gtz.de.

In the case of GTZ staff, the presentations can also be to be downloaded from:
<https://dms.gtz.de/livelink-ger/livelink.exe?func=ll&objId=55874609&objAction=browse&viewType=1>