Growing Inclusive Markets
Business Works for Development ● Development Works for Business

Working document in progress

Business Innovation to Fight Climate Change and Poverty Policy Note

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Introduction

Climate change is a reality. And so is poverty. In both cases we are facing daunting future developments: global temperatures will increase by 2 degrees Celsius if we do not manage to cut emissions by 50 percent worldwide until 2050 compared to 2000.[1] About 2.6 billion people still live in poverty on less than 2 dollars per day.[2] By 2050, 3 billion more people will live on this planet, most of them in cities in developing countries.[3] This is what we know.

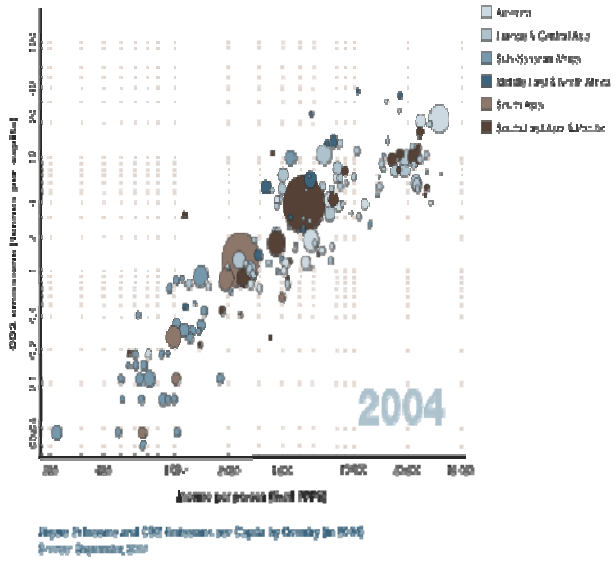
We also know that we are all part of the solution; business leaders, policy makers, civil society and the intermediaries in between. For one thing is clear: there is not one solution to fight climate change and poverty. There need to be many. And the authority of policy has to come together with business' capacity to invest and innovate in order to change our economic system into a direction that is sustainable and just. This policy note focuses on the role of business and existing business models that respond to the challenge. It also argues that other actors need to come in to enable the scale up of these models.

The policy note is organized along three central messages:

1. Success for the planet hinges on our collective ability to mitigate climate change and adapt to the effects of climate change in a way that benefits human development.
2. There are positive examples of private sector solutions addressing both climate action and improved quality of life for the poor.
3. Business cannot solve the problem by itself. In order to achieve the wide-reaching impact that is required in face of the challenge, policy also needs to contribute to systemic change.

The Challenge

The challenge we are facing is to decouple improvements in quality of life from increases in carbon emissions. Integrated and large scale solutions are required to achieve our global objectives: halving poverty by 2015 and halving CO_2 emissions by 2010.



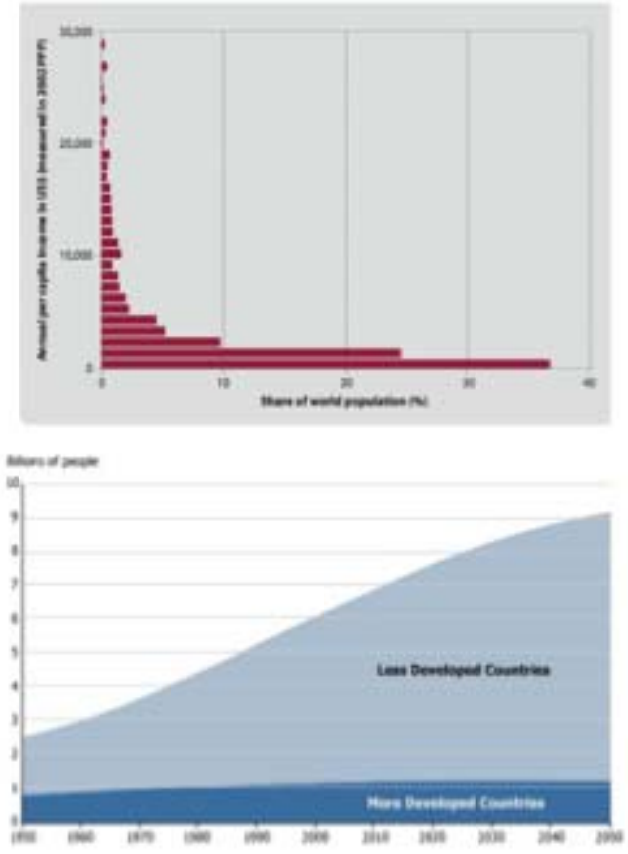
Source: Gapminder 2008

Development to date has always been closely linked to increased carbon emissions. According to the 2009 World Energy Outlook, by 2030, unless there are no changes in government policies, the world primary energy demand will be 40 percent higher than in 2007.[4] Our economies are fuelled by oil and coal and are expected to be so as fossil fuels account for 77 percent of this demand increase. In addition, it is predicted that during 2007-2030, the demand for coal grows by 53 percent.[5] Overall; the demand for energy is increasing mostly in developing countries and emerging markets.

The current and projected CO_2 emissions highlight an urgent need to transition to a low-carbon economy. **The investment required is immense.** The International Energy

Agency (IEA) estimates that limiting greenhouse gas concentrations to 450 parts per million (ppm) CO_2 equivalents, the level identified as providing a 50-50 chance of not crossing the temperature threshold, would require US$550 billion to be invested in clean energy from now to 2030.[6] There is a positive trend in the rapidly increasing investment in clean energy technologies worldwide. At US$155 billion in 2008,[7] it is expected to hit US$450 billion by 2012 and US$ 600 billion by 2020.[8]

At the same time, the need for further human and economic development remains urgent. Many people lack the resources to lead a decent life. More than one billion people lack access to clean water[9], and 1.5 billion people lack access to electricity in developing countries[10]. The commitment of the global community to achieve the Millennium Development Goals (MDGs) by 2015 remains unchanged, but we need to speed up our activities to do so.



Source: Branko Milanovic 2002, UNFPA 2006

Poor people are affected disproportionately by the effects of climate change. The UNDP Global Human Development Report 2007/2008 "Fighting Climate Change: Human Solidarity in a Divided World" clearly outlined how climate change has the potential to reverse the progress made in human development so far and hampering the efforts to achieve the MDGs[11]. From 2000 to 2004, 262 million people were affected by climate disasters annually, with over 98 percent of them in the developing world, placing the most vulnerable populations even at more risk.[12] Poor people are often more exposed to extreme weather events, e.g. because they rely on agriculture for their livelihood, or have their homes in areas prone to flooding. They also have less ability to manage risks, with little access to financial services such as savings or insurance.

Because of climate change, up to 600 million more people in Africa could face malnutrition as agricultural systems break down. An additional 1.8 billion people could face water stress, especially in Asia, while over 70 million Bangladeshis, 22 million Vietnamese, and six million Egyptians could be affected by climate-related flooding.

Source: *UNDP Fast Facts – Climate Change (2009)*[13]

Helping poor people adapt to climate change also requires significant investment. UNDP estimates that at least US$86 billion will be required annually for adaptation to climate change by 2015, more than three times the amount required for mitigation through clean-energy investments! This is an additional cost that needs funding. ODA, at present, provides only about US$ 10 billion per year for climate change-related activities, a small part of what is required.[14]

Failure to respond to the urgency of poverty and climate change with integrated solutions presents a bleak scenario. The poor will become even poorer as harvests fail, water resources become even scarcer, and extreme weather events destroy their housing and livelihoods. We can only speculate about the further consequences of this demise: hunger, migration, and conflict are natural candidates. The stress here is therefore on integrated solutions: climate change and poverty must be addressed together.

Business Solutions

Business has a role to play in finding and implementing these integrated solutions. Private companies are the driving forces in most national economies today. Hence, they must take centre stage in developing sustainable production and consumption patterns. With their capacity to invest and innovate, they are uniquely positioned to create solutions that reduce resource use, while at the same time improve human well-being. Companies and investors are quickly realizing that climate change and poverty are not merely social, political, or moral issues - they present economic and business issues as well.[15] Depending on how proactively a company responds to these issues, they can offer opportunities for future growth rather than merely risks.

Business models that create opportunities for the poor and help to mitigate or adapt to climate change are sure to see growing demand. **Companies can provide essential goods and services to the poor that reduce carbon emissions and help the poor adapt to the effects of climate change.** They can also procure low-carbon goods and services in their supply chain. The table below shows how various sectors can contribute to climate change adaptation and mitigation in doing business with the poor.

The **UNDP Growing Inclusive Markets (GIM) Initiative** documents and showcases inclusive business models. These innovative solutions include the poor as producers, entrepreneurs, employees and consumers, and thus create access to markets and opportunities that have formerly been unavailable. In an ongoing research project, the initiative is looking at more than 100 case studies in more than 35 countries and multiple sectors. Through this broad set of examples, UNDP aims to understand better how business can contribute to poverty alleviation while still maintaining commercial viability. Many of the cases also benefit the environment. Unless otherwise stated, the examples in the table below are drawn from this research. Details for each case are provided in the annex.

One example is Toyola Energy Limited in Ghana. The local company produces cooking stoves and lanterns that target rural dwellers who largely depend on firewood and charcoal for their domestic cooking and also on kerosene for lighting. Toyola products provide them with cleaner, healthier and cost effective means to meet their energy needs. Over the past three years the company estimates that it has supplied about 35,000 households with their products and has offset 15,000 tons of carbon dioxide emissions.

Inclusive Business Opportunities in Climate Action

Agriculture and Forestry sectors

Mitigation	Adaptation
o Support climate friendly agriculture of **low-income farmers**, such as low methane rice cultivation, low nitrogen usage, zero tillage, or bio-digesting agricultural waste. This can be achieved by providing extension services to farmers and by rewarding low-carbon practices. o **Payment for carbon sinks,** such as forest projects through the UN initiative on REDD (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries) that attempts to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon development paths.	o **Provide extension services** to farmers to adapt to changing environmental conditions that include use of native plants and shifting crop variety to increase drought resilience. o **Diffuse water-saving practices** such as drip irrigation and water harvesting. o Provide poor farmers with **insurance options** to protect their crop against weather-related events such as drought and flood.

Examples

Sadia's Program for Sustainable Swine Production in Brazil was designed to assist more than 3,500 swine producers in reducing greenhouse gas emissions from their farm operations.

SELCO has sold solar lighting to more than 100,000 rural homes and to 4,000 institutions such as orphanages, clinics, seminaries and schools in the Indian state of Karnatak.

International Development Enterprise (IDE) India provides cheap treadle (foot-operated) pumps to poor farmers so that they can irrigate their land.

Amanco provides small-scale farmers in Guatemala and Mexico with drip-irrigation systems. Amanco customers increased their productivity by up to 22% while cutting labour costs by 33%. The systems also brought significant water savings.

Source: AMANCO (Mexico)

Energy sector

Mitigation

- **Provide renewable energy sources** off-grid but also in small grids (e.g. small hydro, wind or solar) and on the grid.
- **Develop and diffuse energy-efficient appliances** such as stoves, fridges, and heaters at affordable cost. Private sector investment is still biased towards energy generation technologies; hence a push is also needed for more investment in energy-efficiency technologies.[16] The IEA has shown that, on average, an additional one dollar invested in more efficient electrical equipment, appliances and buildings, avoids more than two dollars in investment in electricity supply. This ratio is highest in non-OECD countries.[17]

Adaptation

- Provide **alternatives to cooking with firewood and more efficient use** (which might become scarce in dry areas)

Examples

Micro-hydro Guangxi provides electricity through renewable energy by a simple, self-constructed mini hydro that was cooperatively built, operated and maintained by a small mountain village population in China.

Toyola Energy Limited in Ghana produces energy-efficient cooking stoves and lanterns. Over the past three years it has supplied about 35,000 households with their products and has offset 15,000 tons of carbon dioxide emissions.

Source: TEMASOL (Morocco)

Finance

Mitigation

- **Develop financial products** that enable private and institutional investors to invest in pro-poor, pro-climate solutions.
- Work closely with project developers to increase and **improve the portfolio of available investment opportunities** into climate-friendly, pro-poor projects.

Adaptation

- **Develop insurance products** that help the poor manage risks, especially weather-related agricultural and property insurance.
- Develop smart financial products that **encourage adaptation**, e.g. housing finance that includes insurance for certain construction types.

Examples

Promasol promotes the use of solar water heating systems in Morocco by offering appropriate financial mechanisms for the development of a local market.

BASIX provides rainfall insurance to farmers in India. The insurance is indexed to independent weather stations that are located in the areas where farmers live. Basix is also working on other sophisticated versions of weather and crop insurance. In 2007, over 11,000 rainfall insurance policies were issued.

Infrastructure/construction sector

Mitigation

- **Develop and diffuse energy-efficient housing** for low-income populations that includes better insulation.
- **Use less carbon intensive building material** or building material that is sustainably harvested.

Adaptation

- **Provide construction materials and know-how** to build housing that can resist extreme weather events and are adaptable to a changing environment.
- Provide **integrated housing and mobility solutions** that provide options for low-income households to live in areas that are less likely to be affected by climate change and to commute less.

Examples

ADAPT (Appropriate Development, Architecture & Planning Technologies) works with low income communities in Egypt to use local and waste materials such as rice straw and iron-fabric leftovers to produce environmentally-friendly building materials that are high quality and low cost.

The Role of Public Policy

These examples show that the know-how and technology is available to make business fight poverty and climate change and work towards a more sustainable and fair world. Many of these case studies are still at the pilot- or early-stage but they show the path to a promising future of more private engagement, more investment. All too often, public policy stands in the way of scaling up inclusive, sustainable business models rather than encouraging them. For example, subsidies for carbon-intensive energy production or price limits for energy in many countries make it more difficult for providers of renewable energies to compete. To reach scale and high impact with their business models, companies need an environment that enables and supports them. Regulation can provide the right incentives. Investments into irrigation can facilitate the implementation of new solutions. For example, irrigation systems are required to avoid the production of methane, a highly potent greenhouse gas, in rice cultivation. Education is an important basis to diffuse product and service innovations that require behaviour change. The first report of the GIM initiative *"Creating value for All: Strategies for Doing Business with the Poor"* showed that it is the lack of such an enabling environment that hinders the success and growth of inclusive business models.

Source: EDF (Mali)

The **Clean Development Mechanism (CDM) is a good example of how smart policies can enable private investment and innovation.** It allows developing countries to earn credits for their emission reduction projects and to sell these credits to industrialised countries. The CDM has large potential, and the United Nations Framework Convention on Climate Change (UNFCCC) estimates the volume CDM credits sold could range from US$10 to US$100 billion per year by 2030.[18] This mechanism and the market that arises from it help projects with a positive impact on human development and our climate get the funding and revenues to make them commercially sustainable.

Such policy innovations require time for experimentation and development as well. The CDM is far from perfect. The procedure for certification is lengthy and complicated. This excludes many of the smaller, riskier, but often more innovative projects. Not surprisingly then, an analysis of CDM pipeline projects reveals that only a limited number of countries are benefiting so far. Projections also show that only China, India, Brazil, South Korea and Mexico will generate over 80 percent of CDM credits by 2012.[19]

The solution required for a sustainable and just world are systemic changes. Policy change alone is not the solution, and neither is the involvement of business, or, for that matter, civil society. We have to work hand in hand to change our economic system. This certainly is not easy, as we cannot be sure what the new system will look like. We have to learn step by step. However, time is not on our side and we need to make these steps quickly.

There are positive examples of such systemic changes. In Brazil, the government requires energy utilities to invest 0.1 percent of their revenues into energy efficiency in low-income communities. One of the most effective measures utilities have found is to replace old fridges with new energy-efficient ones. The utility companies benefit because families that previously tapped the lines for electricity are incentivized by the offer of a new fridge to get officially connected. Thanks to the energy savings, their bill will not be very high anyway, and for low-income families, part of the monthly bill is covered by the government. One of the companies involved in this programme, German appliances manufacturer Bosch Siemens Hausgeräte GmbH, went one level further. Not only do they benefit from the sales of fridges to the utility companies, they have managed to register the carbon reduction from the energy savings under the Clean Development Mechanism. This extra revenue covers the cost of state-of-the art recycling and thus helps to capture the cooling fluids, which are extremely damaging to the ozone layer. This systemic change has created benefits for everybody in the system: sales for the fridge manufacturers, connections for the utilities, new fridges for the households, and tons of carbon emissions saved.

Conclusion

Business is contributing already substantially to finding and implementing solutions for a low-carbon future without poverty. But many challenges stand in the way of scaling these innovative solutions so that they can have the large and fast impact that is needed.

To achieve this, systemic change is required, including change in public policies. Incentives need to be in place to encourage more investment and more innovation by the business community. Only by creating the right incentives for all actors in the system will the goals be achieved**: halving poverty by 2015 and halving our carbon emissions by 2050.**

Endnotes

1. UNFCCC (United Nations Framework Convention on Climate Change), 2009, Fact Sheet: The Need for Mitigation.
2. Chen, S. and Ravallion, M. 2008 The Developing World is Poorer than we thought, but no less successful in the fight against poverty
3. UNFPA (United Nations Population Fund), 2005, World population prospect: the 2004 revisions.
4. IEA, (International Energy Agency), 2009 World Energy Outlook, Paris.
5. Ibid.
6. UNDP (United Nations Development Programme), 2009, Charting a New Low-Carbon Route to Development.
7. UNEP (United Nations Environment Programme), 2009, Global Trends in Sustainable Energy Investment.
8. UNDP, 2009, Environment and Energy Group, Environmental Finance Services Brochure.
9. UNDP, 2006, Human Development Report 2006, Beyond Scarcity: Power, poverty and the global water crisis. New York.
10. UNDP, WHO (World Health Organization), 2009, Environment and Energy Group, Energy Access Situation in Developing Countries, A Review Focusing on the Least Developed Countries and Sub-Saharan Africa.
11. UNDP, 2007, Human Development Report 2007/2008 "Fighting Climate Change: Human Solidarity in a Divided World. New York.
12. IEA, (International Energy Agency), 2009 World Energy Outlook, Paris.
13. UNDP, 2009, Environment and Energy Group, UNDP Fast Facts – Climate Change.
14. UNDP, 2009, Environment and Energy Group, Environmental Finance Services Brochure.
15. Deutsche Bank Group, 2007, Investing in Climate Change – An Asset Management Perspective.
16. UNDP (United Nations Development Programme), 2009, Charting a New Low-Carbon Route to Development.
17. IEA, (International Energy Agency), 2009 World Energy Outlook, Paris.
18. UNDP (United Nations Development Programme), 2009, Charting a New Low-Carbon Route to Development.
19. Ibid.

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Growing Inclusive Markets
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The 'Growing Inclusive Markets' (GIM) Initiative is a **multi-stakeholder research and advocacy platform** led by UNDP to facilitate the engagement of all actors for more inclusive business models. It embodies UNDP's strong conviction that the private sector is a great untapped resource for investment and innovation and responds to a need for better understanding of how the private sector can contribute to human development and the Millennium Development Goals (MDGs).

The GIM Initiative's main objectives are two-fold: i) to deepen the understanding of how inclusive business models and inclusive markets can contribute significantly to sustainable human development through empirical research and analysis; and ii) to enable the creation of more inclusive markets by informing individual, collective and policy action to improve markets environments.

For more information, go to www.growinginclusivemarkets.org, or contact Sahba Sobhani, GIM Programme Manager, United Nations Development Programme, By email: sahba.sobhani@undp.org, or by mail: One UN Plaza, DC1-2382, New York, NY 10017, USA

UNDP's work on Climate Change

UNDP helps developing countries to put in place what people need for a decent life so that they are able to withstand climate change because reducing poverty and protecting the planet go hand-in-hand. To cope with climate change, people need basic access to water, sanitation, food and energy, to institutions that work and a say in the decisions that affect their lives.

UNDP helps poor people to adapt to climate change –from the farmer who wants to grow more resilient crops to the family whose home has just been destroyed by a flood. That means helping countries to put adapting to climate change at the heart of all their efforts to tackle poverty, with proper attention paid to the needs of more vulnerable groups like women and indigenous people. It means ensuring that those efforts are flexible and resilient enough to navigate the challenges climate change may bring in the future. At the same time, UNDP strives to reduce people's exposure to climate-related disasters and, when they do hit, limit their impact on people's lives.

UNDP strengthens the capacity of developing countries to change their path towards a low-carbon future, because climate change demands that we grow in a different way. That means ensuring they have better access to carbon finance to pay for low-carbon development and that they are skilled putting that money to work where it is needed. UNDP helps ensure they can put policies into action – like protecting their forests - that will lead them towards a green, sustainable future.

Source: UNDP Fast Facts – Climate Change (2009)

Case Study Annex

Africa

Toyola Energy Limited

Description			
Objective	To provide their users with cleaner, healthier and cheaper energy solutions.	*Owner*	Suraj Wahab and Ernest Kyei
Approach	**Toyola Energy Limited** in Ghana produces cooking stoves and lanterns that target rural dwellers who largely depend on firewood and charcoal for their domestic cooking and also on kerosene for lighting. The Toyola products (stoves and lanterns) provide them with cleaner, healthier and cost effective means to meet their energy needs.	*Partners*	E+Co helped finance their business plan
Results			
Social	Helped users to save money when addressing their energy needs. Toyola has trained and created employment for over 300 artisans nationwide. Most of this employment is generated within their value chain which comprises of scrap suppliers, stove manufacturers, distributors and retailers.	*Country*	Ghana
Economic	Over the past three years, the company estimates that it has supplied about 35,000 households with their products.		
Environment and climate change	The Toyola cook stove is fitted with a ceramic liner to improve fuel efficiency by 50% in comparison with the traditional coal pot. This technology is aimed at minimizing the rate of deforestation (and consequently carbon emissions) in the country. It is estimated that their products and has offset 15,000 tons of carbon dioxide emissions.	*Sector*	Energy/ manufacturing

Asia

Basix Bhartiya Samruddhi Finance Limited (BSFL)

Description

Objective	BASIX Group is among the world's leading provider of integrated livelihood promotion services and has positively impacted lives of more than a million poor people through its unique holistic approach to livelihoods promotion - which uses microfinance, micro-insurance, agricultural, business and institutional development services in a mutually reinforcing manner.	*Owner*	Vijay Mahajan
Approach	Having worked on crop insurance pilot programs for the previous four years, **BASIX** (one of India's largest micro finance institutions with nearly 100,000 borrowers in nine states) launched India's first rainfall insurance program in July 2003 through ICICI Lombard. Farmer uptake was immediate, with around 100 farmers signing up the first day. In 2007, over 11,000 policies were issued. Informal interviews with about 15 farmers who bought the policies revealed that they are very well aware of the rainfall-based index nature of the contracts and the associated basis risk. The farmers value the quick payout of the weather policy, which distinguishes it from the federal crop insurance policy. Interviewed farmers also understand and appreciate the weighted and capped structure of the contract, as it directly reflects their experience that the distribution of rain throughout the season significantly affects yield.	*Partners*	Ford Foundation, Swiss Development Corporation

Results

Social	BASIX focuses in the backward regions of India, particularly in districts with highest poverty ratios and low human development index (HDI).	*Country*	India
Economic	BASIX has a customer base of over 1.5 million, across BASIX group companies, and has helped support the livelihoods of over a million poor households in the agriculture, allied and non-farm sectors by extending microcredit worth over Rs 2,000 crore (US$ 450 million).		
Environment and climate change	On environmental issues, BASIX has been exploring possibilities for sustainable agricultural practices in various sub-sectors such as cotton, soybean, groundnut, pulses and vegetables. In this initiative, it advocates and implements a Package of Practices (POP) that reduces the application of chemical pesticides and fertilizers to the minimum and includes bio-pesticides and bio-fertilizers as inputs. In Orissa and Vidarbha, BSFL has introduced nutrient management practices with rice farmers, with an aim of reducing chemical fertilizers. Similarly, bio-pesticides application in vegetable crop is another intervention for reducing chemical application. In dairy, BSFL units are initiating fodder crops and grasses cultivation in farmer's fields, so that dairy farmers' dependence on concentrate feed would be reduced for enhancing milk production. Basix also has a host of other environmentally-friendly initiatives.	*Sector*	Financial Services

International Development Enterprise (IDE)

Description

Objective	To serve low-income markets with drip-feed irrigation systems for agriculture.	*Owner*	Founded by Paul Polak
Approach	**IDE Nepal,** is an affiliate of IDE, registered with the Social Welfare Council of Nepal Government. It was established in 1993 with the aim of developing low cost irrigation technologies suitable for smallholders in rural Nepal. More than 80% people in Nepal are engaged in agriculture and a significant number of them have smallholdings. After experimenting with rope pumps, IDE Nepal developed low cost human operated treadle pumps suitable for irrigation in the Terai region of Nepal. This was followed by the development of low cost drip irrigation system in 1995. Subsequently, IDE developed micro sprinkler systems which, along with drip systems were promoted to farmers in the middle hills of Nepal. IDE also developed low cost water storage tanks, designed and promoted Multiple Use Water Systems (MUS) so that water, a scarce resource in the hilly regions could be stored and used efficiently both for domestic and agricultural use.	*Partners*	USAID, Winrock International, Bill and Melinda Gates Foundation and other donors

Results

Social	Today, IDE Nepal operates in 22 districts, having reached more than 1.4 million poor farmers in 240,000 households in rural Nepal.	*Country*	Nepal
Economic	Their programmes have resulted in the sale of 200,000 treadle pumps and 40,000 drip irrigation systems in rural Nepal. It is estimated that IDE interventions have generated an additional income of US$150 per year for each of the 240,000 households whom they have reached.		
Environment and climate change	Agricultural productivity improvement that involves conservation and better usage of scarce resources such as water.	*Sector*	Agriculture

Selco

Description

Objective	To provide sustainable energy solutions to the rural poor	*Owner*	Harish Hande, Founder
Approach	**Selco** aims to empower its customer by providing a complete package of product, service and consumer financing through Grameen banks, cooperative societies, commercial banks and micro-finance institutions in India (and recently, Vietnam). SELCO has sold solar lighting to more than 100,000 rural homes and to 4000 institutions such as orphanages, clinics, seminaries and schools in the Indian state of Karnataka. Armed with equity investments worth US$ 1.4 million from three social investors, namely the Good Energies Foundation, Lemelson Foundation and E+Co, Selco is planning to light up 200,000 rural homes, covering a wider geographic area, in the next four years. SELCO today services its customers from 25 service centres spread all across rural Karnataka.	*Partners*	IFC, Good Energies, Lemelson Foundation, E+Co

Results

Social	Selco's products are used as reliable lighting and electricity sources. They have been used to aid midwives in delivering babies, to power workshops, used for educational purposes, and cleaner cooking amongst many other things. 86% of Selco's customers have responded that securing lower energy costs has been their primary benefit in using Selco products. Next important was the improvement in children's education as they were able to study after dark.	*Country*	India, and piloting in Vietnam
Economic	Selco employs more than 170 employees and has 21 Energy Service Centres in Karnataka and Gujarat. Till date, it has installed 100,000 solar technology based lighting products. Selco broke even in 2001 and profits increased to about 4 million rupees in 2005.	*Sector*	Energy/ manufacturing
Environment and climate change	Selco's products substitute renewable energy for kerosene and other fossil fuels; thereby reducing pollution and CO_2 emissions.		

Yulicun Micro-hydro power station

Description

Objective	Financially self-supported renewable energy power generation to promote local economy development and raising the life standard in western China.	*Owner*	Yulicun Village
Approach	**Yulicun Micro-hydro power station.** Electricity service is a key issue for local economy development and improvement of living standards. But the local electric power company would not extend the power line to the village. To address this, the village head organized all of the village households (24 families) in 1992 to construct a 5KW micro-hydro power station, using the main mountain stream available in the valley without any outside financial assistance. The funding came from all households, and the villagers also contributed labour. Today, the village is self-sustaining its energy needs and the power station is owned, operated and maintained by the villagers themselves.	*Partners*	Village-owned

Results

Social	Overall, improvement of living standards. Better lighting in the evening, kids have better conditions to study. Social activities that had been severely restricted during dark winter nights are now possible. Improving water supply, especially drinking water for residential uses, is another benefit of the power availability.	*Country*	China
Economic	Micro-hydro (up to 4MW) needs little investment and has the lowest power generation cost, hence this has been an economic investment by the villagers.		
Environment and climate change	Providing electricity from a renewable resource. Improving indoor air quality and displacing fossil fuel consumption.	*Sector*	Energy

Latin America and the Caribbean

Amanco

Description

Objective	To serve low-income markets with drip-feed irrigation systems for agriculture.	*Owner*	*GrupoNueva*
Approach	**Amanco,** a subsidiary of the conglomerate GrupoNueva, developed a hybrid value chain model for serving low-income markets in Guatemala and Mexico with drip-irrigation systems. As part of that plan, the company shifted from selling water conveyance supplies to offering integrated irrigation solutions, priced per hectare of land. The solutions included services to increase farm productivity and to maximize water efficiency. The company partnered with unconventional civil society organizations—closer to low-income clients—and with others providing microcredit and access to alternative channels for commercialization.	*Partners*	*Ashoka, Rasa, Wal-Mart Mexican Foundation*

Results

Social	Better irrigation methods raised productivity for Amanco customers up to 22%, cut labour costs by 33%.	*Country*	Mexico
Economic	Amanco leads the production and marketing of water management systems in Latin America with a focus on the building sector and on drip-feed irrigation for agriculture. In 2005, its net sales were US$688 million, it employed 7,133 people.		
Environment and climate change	Efficient use of water resources. Providing farmers with a means to adapt to a drier climate.	*Sector*	Agricultural/ irrigation

Sadia's Program for Sustainable Swine Production (3S program)

Description

Objective	To assist more than 3,500 swine producers in reducing greenhouse gas emissions from their farm operations.	*Owner*	
Approach	**Sadia**, one of the world's leading producers of chilled and frozen foods, is a market leader in Brazil, with more than 600 products in the meat, pasta, margarine and dessert segments. It is also the country's main exporter of meat products. The Program for Sustainable Swine Production was designed to reduce greenhouse gas emissions from the more than 3,500 swine producers in Sadia's supply chain and to qualify the reductions as a Kyoto Protocol Clean Development Mechanism project in order to sell carbon credits. The programme seeks to bring sustainability to the company's supply chain by providing supplementary revenue from carbon credits and better working conditions for swine producers. The case details the innovative use of technology and forward-thinking project structure to capitalize on trading credits in new market exchanges.	*Partners*	*Sansuy and Avesuy, Espirito Santo University*

Results

Social	Better working conditions for swine producers. Increased revenue for the small and medium producers.	*Country*	Brazil
Economic	Sadia is one of the world's leading producers of chilled and frozen foods. In Brazil, the company leads all market segments of its 680 products, including meat, pasta, margarine and desserts (see Table 1 for details). It is also the country's main exporter of meat-based products. The company has more than 40,000 employees and 12 industrial plants in Brazil. Its 2006 revenue totaled US$3.7 billion.		
Environment and climate change	Sadia carries out proper waste management and disposal, thus avoiding soil and water pollution. In addition, Sadia's 3S program reduces emissions of greenhouse gases. With biodigesters, swine waste is fermented by bacteria in closed reservoirs, avoiding methane emission. In the process, the methane gas is converted into CO_2, which is 21 times less intensive in terms of greenhouse gas effects. Such sequestration of greenhouse gases generates carbon credits under the Kyoto Protocol Clean Development Mechanism (CDM) that can be traded with other companies in need of carbon offsets. Gases captured from the biodigester operation can also be used as energy, thus reducing operating costs for producers. Also, the byproduct from the fermentation process can be used as crop fertilizer or as food for fish breeding.	*Sector*	Agriculture

Middle East and North Africa

ADAPT (Appropriate Development, Architecture & Planning Technologies)

Description

Objective	Providing appropriate architectural design and construction and the technological capacity to construct low-income housing with locally available material in rural, urban or desert locations in the Middle East region.	*Owner*	Hany and Abdel Rahman El Miniawy
Approach	The "slum upgrading" market is a significant centre of demand for quality construction materials and techniques. **ADAPT** is working with low income communities to meet this demand in a sustainable way. The organization uses local ingredients common to the ancient Egyptians, along with treated waste products like rice straw, cement dust, and iron-fabric leftovers to produce environmentally -friendly building materials that are high quality (certified by the government) and low cost (30%below standard alternatives).	*Partners*	Egyptian Center for Economic Studies

Results

Social	**ADAPT** sets up apprenticeship with master builders giving youth employment, new skills and a role of participation and empowerment. Configuring the resource base especially including locally available material for building and insulation has led to economic value to the consumer by an average 30 per cent decrease in building costs	*Country*	Egypt
Economic	In Egypt, the company has built over 10,000 affordable housing units to date, in the poorest Cairo areas. Out of a total of 21 project conducted in Egypt starting in 1983, ADAPT reported a gross revenue result of US$20 million in 2004.		
Environment and climate change	**ADAPT** uses local ingredients common to the ancient Egyptians, along with treated waste products like rice straw, cement dust, and iron-fabric leftovers to produce environmentally -friendly building materials that are high quality.	*Sector*	Housing/ construction

Promasol

Description

Objective	To reduce the dependency of the country towards imported energy, and improve the quality of Solar Water Heaters available to customers.	*Owner*	Managed by Center for development of renewable energies
Approach	**Promasol** promotes the use of renewable energies in Morocco by implementing appropriate financial mechanisms especially for the development of a local market for solar water heating systems in the public, residential and commercial sectors. This includes financial support for suppliers, insurance commercial partnerships, and leasing models to unleash demand.	*Partners*	UNDP, Ministry of Energy and Mines, French global environment facility

Results

Social	Broad job creation and jobs created by new companies in the SWH field. The program further supports charity organizations with a chance to improve their services both directly through the provision of warm water to their residents and patients, and indirectly through using the money they saved to improve other services to the poor.	*Country*	Morocco
Economic	All suppliers/distributors involved in the program have realized very high levels of profitability varying between 13%, and 10.8%		
Environment and climate change	Solar Water Heaters are run by renewable energy resources, reducing the impact on the environment. PROMASOL has allowed avoiding about 1.3 million tons of CO_2 emission since its inception in 2002. It is even expected to reduce about 920,000 tons of CO_2 per year until 2020.	*Sector*	Energy