

A business perspective on climate change negotiations:
Competitiveness – **O**pportunity – **P**artnership

Business actions – Best practice examples



International Chamber of Commerce
The world business organization

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See also:

[ICC's business perspective on climate change negotiations: Competitiveness – Opportunity – Partnership](#)

This document contains extracts from the following ICC publications: [ICC discussion paper on energy efficiency with case studies](#) and [ICC Green Economy Roadmap –Best practices and calls for collaboration](#).

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Aipe (Italian Association of Expanded Polystyrene Producers) & PVC Forum Italia (Italian Association of PVC Industry)

Nearly zero-energy buildings: the '2-Litre House'

Description

The "Casa 2 litri" (2-Litre House/Passivehouse") is a project promoted by Aipe and PVC Forum Italy to propose and to share an architectural approach able to construct "Near Zero Energy" buildings.

This project is not commercial and it is available to all. It conforms to the most demanding European directives in terms of energy saving. In substance this approach reconciles bioclimatic principles (such as analysis of the climatic condition, designed of the rooms based on the climatic characteristics...) with the aware choice of sustainable materials (such as EPS – expanded polystyrene – and PVC for the hyper-insulation of the components) and constructive elements (solar and photovoltaic panels, condensation boiler and/or heat pump, adiabatic heat sources for cooling, controlled ventilation..) to obtain maximum performance.

A pilot project was completed at Ozzano dell'Emilia, near Bologna, in 2009, with the construction of five separate family houses and an Experimental Didactic Centre. The buildings and their performance are being monitored for five years.

The monitoring of energy consumption in the first months of the houses' life saw a consumption of about 12-15 Kwh/m²/year for heating/refreshing and hot sanitary water, in accordance to the 'Passive House' criteria. However, taking into account the contribution from renewable sources, the Ozzano complex 'production' covers not only the 12-15 Kwh/m²/year for heating/refreshing and hot water, but also 80% of household electricity needs.

It means that the Ozzano project could be easily considered as the first example of a 'nearly zero-energy building', already available 10 years earlier than the target set by the EU. Furthermore the choice of materials made on the basis of their LCAs resulted in a further reduction of 63% of the Global Warming Potential and Gross Energy Requirement deriving from their production.

This first "2-Litre House" include a maintenance/management guide accompanied by life-cycle assessments (LCAs) of used materials.

The same concept has been applied to an industrial warehouse built at San Lazzaro di Savena, near Ozzano. In this case the average energy consumption for heat and hot water is around 21 Kwh/m²/year, which is an excellent standard for industrial buildings. But what is more important, with solar panels and photovoltaic cells, it also covers at least 60% of its production needs for electricity.

Initiating Organization

Aipe (Italian Association of Expanded Polystyrene Producers): www.aipe.biz

PVC Forum Italia (Italian Association of PVC Industry): www.pvcforum.it

Geographic Scope

National (Italy)

Experiences (Learning's) of Best Practice or Potential Goals of the Collaboration

An important and innovative aspect of the Ozzano project is the overcoming of the classic 'Passive House' criteria, generally characterised by energy performance only.

The constructional approach, in fact, integrates the sustainability criteria:

- Economic criteria, regulating demand and supply, considering the economic analysis of construction processes and maintenance costs;
- Functional criteria, evaluating technical performance, durability, quality of components and internal and external comfort;
- Environmental criteria, evaluating the environmental impact of materials and components, energy saving and sustainable use of natural resources.

The sustainability of the materials chosen is a fundamental aspect: all the materials have to show a favourable LCA (Life Cycle Assessment) for each application. Furthermore, all the materials utilized in

the Ozzano project have to satisfy, together with the technical required performance, increasingly stringent requirements in terms of safety, non-toxicity and eco-compatibility. In addition, the Didactic Centre should become a “Master Class Energy Centre”, an important location for conferences and training courses about sustainable building.

Type of Partners Involved/Wanted

Partners involved:

- PA (Commune of Ozzano dell'Emilia – Bologna)
- Industry partners: Members of Aipe and PVC Forum Italy which supplied materials and components
- Studio Arkit & Partners (Bologna) that designed the first “2-Litre House” project in Ozzano dell'Emilia

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

A new building approach like that embodied by the Ozzano Emilia ‘passive house’ has at the core of the project the goal of exploring new processes, new methodologies, new use of materials and elements whilst utilising everyday materials and simple technologies that anyone could afford. This means building on conceptual innovation, energy efficiency and resource saving, with construction costs comparable to traditional buildings, with significant savings in terms of running costs.

The same constructive approach, here used for residential and industrial buildings, is applicable for other public and private kind of buildings.

With the aim of sharing knowledge and culture, the proposed approach is free and available for everybody and actually, several other projects sharing the same concept are already ongoing in Italy for residences, campus, highway restaurants, SPAs and shopping centres.

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

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Alstom

Alstom Grid Emissions Factor Database

Description

The issue of baseline setting is a critical issue of for defining and managing emissions reductions paths. The impact of implementing any emissions reductions activity or a project needs to be assessed with respect to an estimated "business-as-usual" scenario.

Currently, only 11 CDM host countries publish data on their grid CO₂ emissions factors. Even though such data is crucial, also beyond the CDM, for assessing the impact of implementing new power technologies no grid emissions data from developed countries is yet available.

Alstom has developed a database of grid emissions factors at a national electricity system level for 184 countries that enables Alstom to quantify the CO₂ emission reduction our customers have achieved due to Alstom technology.

The methodological approach for developing this database is based on a standard, multi-project baseline estimation procedure of the internationally recognized standards: GHG Protocol and CDM baseline estimation tool. The approach as well the results has been verified by a third party.

Initiating Organization

Alstom

Geographic Scope

Global

Experiences of Best Practice or Potential Goals of the Collaboration

The used methodological approach for developing this database is a standard, multi-project baseline estimation approach as described in the GHG protocol (Guidelines for Quantifying GHG Reductions from Grid-Connected Electricity Projects) jointly developed by WRI and WBCSD and as operationalized in the CDM methodological Tool to calculate the emission factor for an electricity system (Version 02).

The database has been developed in order to quantify the contribution of Alstom Power offerings to reduce CO₂ emissions for its customers, and hence for the global power generation sector, as they operate new power plants with Alstom technologies or existing ones after having benefiting from Alstom service solutions.

The assessment has been made project-by-project taking into account in each case (1) the specific characteristics of the project and (2) context (country, grid...) in which it is implemented.

The full methodological approach as well the results of the quantified emissions reduction was verified by a 3rd party audit partner.

Compared to a country level analysis where relevant data on installed capacities, generated and transmitted electricity, fuel consumption (or CO₂ emissions) at power plant level and load curves of the electricity systems can be usually gathered (bottom-up analysis), the Alstom grid factors (OM EF & BM EF) estimation is based on a developed top-down model using data provided by external sources on total installed capacities and generated electricity by fuel/country/year and total CO₂ emissions of the electricity sector by country/fossil fuel type/year.

Official data published by national electricity authorities (from the 11 countries mentioned above) are used to validate the results of the Alstom approach and to analyze the sensitivity range.

The Alstom developed approach shows that also in view of lack of detailed electricity generation and emissions data, acceptable and consistent results within a range of +/- 15% from officially published data can be achieved. These results of the model are used for countries where no grid emissions factors are being estimated and published. Officially published values are successively integrated into the Alstom global emissions factors database.

Type of Partners Involved/Wanted

- Designated National Authorities (CDM eligible countries)
- National electricity authorities for the rest of the world.

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

Alstom strongly believe that baseline setting would also support the establishment of emissions monitoring registries and inventories being key prerequisites for setting national emissions reductions targets and for enhancing the transparency while assessing the potential and the economic viability of emissions reductions projects across countries, technologies and fuel types. Even in developed countries, where there is also a need for assessing the impact of implementing new power generation technologies and solutions on achieving emissions reductions targets, no baseline emission factors of the electricity systems are yet available.

From this perspective, Alstom is willing to share its estimations of grid emissions factors with countries where such data is still missing. Particularly for least developed countries, where efforts on building emissions inventories and estimating grid emissions factors are facing lower maturity levels of institutional structures and a lack of required capabilities, the developed model offers a relatively efficient way of getting a preliminary and acceptable approximation of their grid emissions factors.

Comments: Please list any additional Statements, messages or call for action you may wish to gather from the audience.

Alstom would also highly welcome the establishment of a global grid CO₂ emissions factor database managed by the UNFCCC or another UN body based on submissions of official data by governmental bodies of all countries (provided by electricity authorities, economic and environmental departments/ministries, etc.) on a yearly basis.

Bank of America

Nuru Energy

Description

Bank of America Merrill Lynch (BofAML) financed Nuru Energy, a social enterprise providing an affordable and clean off-grid lighting system in sub-Saharan Africa. BofAML provided upfront capital via an option premium to purchase carbon credits on which it takes price and delivery volume risk. These credits are Kyoto compliant Certified Emission Reduction carbon credits. Unusual for a carbon deal, it also includes microfinance assistance, crucial given Nuru's business model which involves selling LEDs indirectly to rural customers through microfranchise entrepreneurs. The option premium provides Nuru capital to scale up its operations and secure revenue from sale of credits earned for reducing CO₂ emissions by displacing use of kerosene with rechargeable LEDs.

Nuru Energy's business model is entirely focused on the base of the pyramid. Nuru Energy works with local organizations to recruit and train micro-franchise entrepreneurs who come from disadvantaged and rural communities, including women. Nuru Energy Entrepreneurs, who sell Nuru's LED lights to their community and then offer POWERCycle™ recharging services for a small fee, typically earn in 20 minutes what they previously earned in an entire day.

Initiating Organization

Bank of America (www.bankofamerica.com)

Geographic Scope

Rwanda, Tanzania, Uganda, Kenya, Burundi and other countries in Sub-Saharan Africa

Experiences of Best Practice or Potential Goals of the Collaboration

This deal works because of its innovative twinning of microfinance and carbon finance. Microfinance plays a crucial enabling role since Nuru Energy's unique distribution strategy is to sell its LEDs (and other off-grid products) indirectly to rural customers through rural micro-franchise entrepreneurs who are equipped and trained by Nuru Energy and financed by MFIs (Microfinance institutions). Carbon finance from monetising the carbon credits earned from replacing kerosene with LEDs enables BofAML to recoup its option premium and earn a risk-adjusted return for taking price and volume risk on carbon credits.

The ultimate beneficiaries of this deal are the households in rural communities that are able to displace use of kerosene, an expensive and heavily polluting fuel, with LED to provide a next generation lighting service.

Microfinance unlocks start-up capital for micro-franchise entrepreneurs who come from disadvantaged and rural communities. Over the life of the deal, 3.5 million tons of CO₂ emissions will be reduced.

Over the life of BofAML's deal with Nuru Energy (2010-2020), it is expected that 3.5 million tonnes of CO₂ emissions will be avoided through displacement of kerosene with LED for lighting services. By 2020, this will make the deal one of the largest greenhouse gas emissions reduction programs implemented with private capital in a Least-Developed Country (LDC).

There is huge scope for scaling up the use of rechargeable LED lighting in Africa through carbon finance and microfinance. The deal between BofAML and Nuru Energy covers 3.5 million tons of carbon credits which will result from the eventual establishment of several thousand entrepreneurs and the deployment of thousands of Nuru Lights in East Africa.

Type of Partners Involved/Wanted

List the type of partners that have already been engaged or could engage in the future (e.g. industry partners in the value chain, National Chambers of Commerce, Governments, universities, civil society actors....)

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

This model can be replicated across many developing countries. Nuru has already established itself in 5 countries and has the opportunity to significantly broaden this over the coming years. A global market for carbon through policies that achieve meaningful emission reductions using market mechanisms like emissions trading and project offsets (carbon credits) is also critically important since this acts as a project enabler that attracts the carbon finance.

Comments: Please list any additional Statements, messages or call for action you may wish to gather from the audience.

This transaction is an example of a new business paradigm that weaves together carbon finance and microfinance to deliver multiple positive outcomes in the Least Developed Countries. While each element of the business brings significant benefits, when combined they provide a compelling model for green growth and development. In particular, access to carbon markets is facilitative of a whole chain of opportunities that ultimately have global as well as local beneficial impacts. More importantly, this model can be used, with slight variations, across the developing world.

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

Abyd Karmali, Managing Director and Global Head of Carbon Markets, BofAML

Bank of America

Project AMP and Project SolarStrong

Description

Bank of America Merrill Lynch (BofAML) structured and drove a landmark deal (Project Amp) to finance the installation of approximately \$2.6 billion of solar panels on commercial and industrial rooftops across the US. This deal represents the largest distributed rooftop solar generation deal globally in history. The project will create the equivalent of up to 10,000 full-year jobs across up to 28 US states at distribution facilities owned and/or operated by Prologis (an owner of industrial real estate). Once fully funded and completed, these installations are expected to provide up to 733 megawatts (MW) of distributed solar energy, which is enough clean, renewable energy to power approximately 100,000 homes.

BofAML helped secure a federal loan commitment that will cover 80 percent of the \$1.4 billion in debt financing, under the Department of Energy's Financial Institutions Partnership Program (FIPP). The total cost of the project will be \$2.6 billion, the remaining portion of which will be financed by the private sector over a four year period. The \$1.4 billion loan guarantee is one of the largest awarded by the U.S. government to support renewable energy development.

Leveraging the model developed for Project Amp, BofAML is also acting as structuring advisor and sole lender for the largest residential solar deal in history, referred to as "Project SolarStrong", which is expected to build more than \$1 billion in solar power projects for privatized US military housing communities across the country. SolarStrong is expected to create up to 300 megawatts of new solar generation capacity through the installation of rooftop photovoltaic (PV) systems on up to 120,000 US military residences across the country. The project will create thousands of jobs, many of which will be filled by US veterans and military family members, who will be recruited, trained and employed to install, operate and maintain the PV systems.

BofAML helped to create a financing structure for SolarStrong that does not rely on a US Department of Energy loan guarantee, making it the first solar deal of this magnitude to move forward without a government guarantee.

The two projects are vast, yet eco-friendly: The solar arrays will be built on existing structures, and will not require additional infrastructure (such as transmission lines) to get the power to where it's needed. The solar arrays will be built on existing rooftops and plug each installation directly into the grid in the communities that need the power.

The two deals were also designed to serve as a blueprint for future large-scale projects, paving the way for growth and expansion of the distributed solar sector. The transactions can also serve as models for other types of distributed energy generation, and might even help create large-scale financing alternatives for energy efficiency.

Initiating Organization

Bank of America (www.bankofamerica.com)

Geographic Scope

United States, though this model could be applied in other countries that have a similar regulatory infrastructure and adequate solar resources.

Experiences of Best Practice or Potential Goals of the Collaboration

Before Project Amp, solar distributed generation was fragmented and underserved by the financial markets. There were no large-scale debt financing tools available, and projects generally were

financed with equity alone. BofAML recognized that equity investments were not going to be sufficient to fund the massive growth potential of the solar distributed generation market, so it set out to develop a long-term debt model that could be replicated and scaled up to provide an optimal combination of debt and equity to finance solar distributed generation projects on a scale that was impossible until now.

BofAML partnered with two leading companies – the industrial real estate owner Prologis and power generator NRG Energy. Prologis is the leading owner, operator and developer of industrial real estate, focused on global and regional markets across the Americas, Europe and Asia. NRG Energy is a Fortune 500 and S&P 500 Index company that owns and operates one of the country's largest and most diverse power generation portfolios.

The partnership and government backing will help reduce the costs of rooftop solar projects. The scale of the project, together with the financing structure and the DOE guarantee, will make this a game-changer for the industry and will transform the way that rooftop solar works in the U.S.

This project will add significant scale to the distributed solar market in the U.S. and provides economic and environmental benefit to both companies' shareholders and customers.

SolarStrong moving forward without a federal loan guarantee is a clear indication that long-term incentives such as the investment tax credit are working. One primary contributing factor to the success of this project was BofAML's prior experience in Project Amp, which helped show the company what could be possible and what sort of funding plans are best to use, and effectively laid the foundations for doing a transaction that did not require a guarantee.

Type of Partners Involved/Wanted

Corporations, Investors, Governments

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

Project AMP and SolarStrong are transforming the solar industry by revolutionizing how distributed solar is financed and rolled out, driving down costs, and making rooftop solar more competitive with other types of power generation. Future success will depend on continuing to develop large-scale financing tools that work with or without the help of a government guarantee.

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

Jonathon Plowe, Head of New Energy & Infrastructure Solutions, Bank of America Merrill Lynch

Bosch Brazil

Flex Start System

Description

Flex Start system is a cold start management system used for flex fuel vehicles in Brazilian automotive market. This new technology enables engine cold start when powered with ethanol, without the assist of the gasoline sub-tank. This new product concept not only brings reliable engine start, but also improves cold start drivability, reduces vehicle emission level, is safer and brings more comfort for the driver.

FLEXSTART

Components

- Electronic control unit
 - _Manages Flex Start System
 - _Controls fuel temperature through heating power



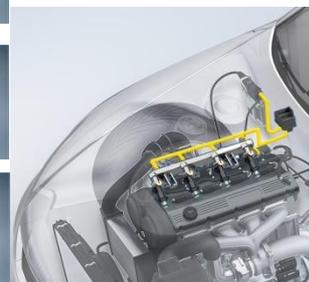
- Heating control unit
 - _Activates the heaters according to ECU demand
 - _Inform dissipated power to ECU (power feedback)
 - _Protects heaters (Rmax)



- Fuel rail assembly
 - _Distributes heated fuel to the injectors which optimize spray



- Heating element
 - _ Supply necessary amount of energy of heat ethanol



Initiating Organization

Bosch Brazil
www.flexstart.com.br

Geographic Scope

Developed in Bosch Brazil for the automotive local market, specifically for flex fuel engines. Implementation of such technology to other markets which uses ethanol based fuels could be possible.

Experiences (Learning's) of Best Practice or Potential Goals of the Collaboration

The Flex Start systems have several advantages in relation to current adopted solution:

- _ Clean and economical: reduction of vehicle emission levels.
- _ Better engine start at lower temperatures and drivability during after start.
- _ More comfort for the driver, since he does not need to remember to fill sub tank.
- _ More safe during collisions since eliminates the sub-tank in engine compartment. It also avoids contact of gasoline with hot engine during tanking.

Type of Partners Involved/Wanted

Involved partners: local universities, technical center in Germany and Bosch facilities worldwide.

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

Commitment of all players. ie. Engineering, facilities, manufacturing engineering, environment staff, etc..

Flex Start System Awards

- Bosch Innovation Award, from Robert Bosch, in 2008
- Environmental Prize, from AEA, in 2009
- Technological Innovation of the Year, from Autodata, in 2009

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

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Braskem S.A.

Climate Change Mitigation Braskem's Strategy

Description

Braskem is the largest petrochemical polymers producer of the Americas and the largest biopolymer producer of the world. It has twenty eight production's facilities at Brazil, five at US and two at Germany. Since its establishment in 2002 Braskem has been committed to conducts its businesses according the sustainable development principles.

Braskem defined three pillars for its sustainable development strategy: to have more sustainable processes; to have a more sustainable product portfolio and to offer solutions to the society for a more sustainable life. All of them depend on innovation and technology investment.

Related to its industrial processes and to climate change mitigation contribution, Braskem efforts begun in 2006. There were identified improvement focuses in the most important greenhouse gases emitters. Many of them were related to heat and energy consumption and to hydrocarbons fugitive emissions. Some procedures were revised and some equipments and instillations were improved. All this effort resulted on the reduction of more than 18% of the intensity of greenhouse gases emissions, from 0,80 t CO₂e/t product in 2006 to 0,65 t CO₂e/t product in 2010.

An example improvement practice in some facilities was integration of production data management in the ERP Information System with the support of a new system known as a MES (Manufacturing Execution System). It helps to close the material balance every day, which is useful to monitor every environmental key performance indicator more closely. This improved system was crucial for planning actions, optimization process and identify opportunities.

Other tools were used like the PDCA cycle (Plan, Do, Check, Action) and DMAIC (Define, Measure, Analyse, Improve, Control) wich is based improvement projects like Six Sigma.

All these initiatives were implemented under the umbrella of a Health, Safety and Environment integrated management system called SEMPRE, which uses a sectorial worldwide improvement program as a reference: the Responsible Care.

Initiating Organization

Braskem S/A
www.braskem.com.br

Geographic Scope

Mostly the Braskem's Brazilian industrial facilities.

Experiences (Learning's) of Best Practice or Potential Goals of the Collaboration

Focus on clean technologies.
Improvement in the environmental policy of the company focused in resource efficiency.
Reduction of Greenhouse Gases emissions

Type of Partners Involved/Wanted

- Engineering consultancies.
- Environmental Management Certification Bodies.
- Environmental Agency.

Conditions for Success/Success Factors:

The project development had the support of decisive leadership, supported by 2020 Company's Vision, which seeks "to be the world leader in Sustainable Chemistry, innovating to better serve the people". Investments in the environmental area, as the one done, are only possible when there is entrepreneurial leadership commitment to HSE issues.

The search for sustainable solutions, which has become a differential in the company, was the primary motivating factor for perseverance during the 10 years that the project has already developed.

The training and entrepreneurial vision of the team were also key, because projects like this arise from the mere perception of improvement points and the constant research for results in line with its vision and mission.

Comments:

All these figures were evaluated by a third party certification and are available at Braskem internet web site (www.braskem.com.br). These figures are also reported to the public through the CDP (Carbon Disclosure Project) web site.

Provide name of focal point for this engagement:

Mario Pino, Braskem Corporate Health, Safety and Environmental Manager (mario.pino@braskem.com.br) and Silvia Reis, Braskem Bahia Basic Petrochemical Unit Health, Safety and Environmental Manager (silvia.reis@braskem.com.br).

Braskem S.A.

Green Plastic

Description

In June 2007, Braskem reported to the world the pilot production of the first polyethylene developed from ethanol produced with sugar cane. The innovation, a milestone in the global petrochemical industry, uses renewable raw material instead of oil derivative, and leads to reduction of global heating due to absorption of the CO₂ from the atmosphere during the growth of the sugar cane. For every ton of produced green polyethylene up to 2.5 tons of CO₂ are sequestered and fixed. This is a significant innovation, developed by the company in its Technology and Innovation Center (Centro de Tecnologia e Inovação) located at Triunfo (RS). The plant, with capacity to produce 200 thousand tons/year started its operations in September 2010.

Green Polyethylene is a thermoplastic resin made with ethylene obtained from sugar cane ethanol. It has properties that are identical to those of conventional polyethylene, which is one of the most widely used resins for flexible packing and other plastic products around the world, with the advantage of being made from raw material coming from renewable sources. It is recyclable as any resin, but it is not biodegradable, because it has the same characteristics of the fossil plastic. If it were biodegradable, the Green PE of Braskem would return to the atmosphere all the CO₂ that was absorbed during its life cycle, thus losing its eco-efficiency.

The innovation was submitted to one of the main international laboratories, Beta Analytic, which used ASTM D6866 standard to determine the contents of renewable source carbon in a sample of the product. This method allows differentiating carbon from fossil and renewable sources.

In 2011, Green PE of Braskem received the maximum certification of the Belgian company Vinçotte, main institution for assessing products with contents of renewable origin. The analysis considered samples of HDPE (High Density Polyethylene) and LLDPE (Low Linear Density Polyethylene) families. All the grades received four stars certification, attribution of maximum quality granted by Vinçotte. Until April 2014, the green polyethylene of Braskem shall use the 'Ok Biobased' seal.

Initiating Organization

Braskem S.A. – www.braskem.com.br and www.braskem.com.br/plasticoverde

Geographic Scope

Brazil – all over the territory

Already being used in the USA, Japan, Argentina, France, Netherlands, Switzerland and other countries of Europe.

Experiences (Learning's) of Best Practice or Potential Goals of the Collaboration

By becoming a worldwide pioneer with the introduction of a renewable source thermoplastic resin, adding an environmentally friendly product to its portfolio, Braskem complies with a growing trend of consumers for valuating sustainable development. Thus, the company has immediately attracted the attention of companies using polyethylene base products all over the world, becoming a reference in the sector, due to the possibility of the customers to associate their brands with this commitment with sustainability.

The production of green PE provides important image gains to the company by showing its environmental commitment and concern and, at the same time, it is an incentive for continuing the investments looking for other renewable source technologies.

With the larger professionalization of the Brazilian sugar and alcohol sector, by increasing mechanization in harvesting and preparing the plants for producing bioelectricity, besides increasing the productivity, there is space for sustainable growth of raw material production, which is the ethanol. Brazil has 22% (340 million hectares) of all the area available for harvesting in the world. The agriculture used only 18.6% of this area, and sugar cane uses 7.8 million hectares, it is calculated that 3.4 million correspond to the area for ethanol production. Since cattle use 220 million hectares, in most part extensively, there is a large area available for expanding sugar cane production. It should

be mentioned that the Amazon does not have appropriate climate for planting and is out the zone for sugar cane, thus avoiding that sugar and alcohol plants should receive license for operating in this region.

Braskem, in order to reinforce its commitment with the sugar cane production chain, has created a code of conduct for its ethanol suppliers, defining sustainability criteria, such as compliance with environmental guidelines, respecting biodiversity, human and labor rights. The code of conduct was inspired in the best practices described in the Agro-environmental protocol of the State of São Paulo, Global Pact and National Commitment to improve labor conditions regarding sugar cane.

The use of ethanol has allowed Braskem to diversify its raw material matrix, until then consisting only of naphtha and gas.

Every produced ton of Green Polyethylene captures and fixes up to 2.5 tons of CO₂ from the atmosphere, the main greenhouse gas (GHG), according to the eco-efficiency analysis of Fundação Espaço Eco. Thus, it collaborates reducing the greenhouse effect and, as a consequence, global heating.

Another environmental advantage of the innovation is that, besides being a renewable source product, it may be recycled in the current recycling systems. Also, the recycled Green PE Verde may be incorporated to the productive process of the transformer.

For this reason, since the announcement of its production in 2007, green polyethylene has collected several partners and customers that contribute to show the sustainability and efficacy of the biopolymer.

The resin with 100% renewable raw material has attracted international attention, reaching companies such as Danone, Coca-Cola, Procter & Gamble, Johnson & Johnson, Shiseido, TetraPak, Nestlé, Natura and Arena Amsterdam, among other.

Currently, the Green PE Verde is present in various segments: food and beverages; automotive; personal care and cleaning; cosmetics; and retail.

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

The introduction of Green Polyethylene was the result of the joint effort of the areas of Technology and Innovation, sustainable development, marketing, projects and production Braskem, with active participation of the entire leadership of the company, starting with the president. Our main objective is pointing our actions in the direction of sustainable chemistry, where this resin is one of its elements, besides providing sustainable solutions for the customers.

With this evolution, Braskem has taken another important step in its strategy of acting conforming to the sustainable development and advanced in the compliance with the public commitment: "It is necessary to mature to become green", disclosed in 2009, with the commitment, among other things, to reduce the intensity of greenhouse gas emissions. The index in fact was reduced from 0.76 tons of CO₂ equivalent per ton of product in 2008 to 0.65 in 2010, with presents a reduction of 14% during the period.

The use of renewable raw material, originated from sugar cane, for production of Green Polyethylene is inserted in the process for reduction of greenhouse gases because the carbon in its composition comes from the carbonic gas disperses in the atmosphere. With the production of 200 thousand tons of green polyethylene, Braskem is contributing with a yearly reduction in the emission of up to 500 thousand tons of CO₂, which is equivalent to neutralizing the emission of about 550 thousand vehicles per year*. Also, the sugar cane provides higher energetic productivity when compared to other energy sources, such as corn and beets.

The dissemination of the use of ethanol, with the development of the alcohol chemistry, helping to reduce the greenhouse effect has been continued by Braskem and is motivating other companies. Braskem has introduced, in Bahia, a product partially using renewable raw material: the ETBE. And, aligned with its strategy, Braskem disclosed in Oct/2010, the construction of another unit for producing renewable raw material with expected investments of about US\$ 100 million. This is a green propene plant, also derived from sugar cane ethanol, which shall have minimum capacity of 30 thousand ton/year and with startup predicted for the end of 2013. The preliminary eco-efficiency study has shown to be quite favorable, where every ton of produced green PP shall capture and fix up to 2.3 tons of CO₂. This shall allow the production of green polypropylene, which in its fossil base version is the second thermoplastic resin most used in the world. Green PP shall complement the portfolio of biopolymers of the company and shall allow new applications and partnerships.

***Based upon CO2 emission of 1.0 cars with gasoline running 15 km per day during 1 year.
Source: 2006 IPCC Guidelines for National Greenhouse**

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

Rodrigo Belloli, responsible for Renewable Chemistry of Braskem. / rodrigo.belloli@braskem.com.br

Credit Suisse AG & WWF Switzerland

The Role of Banks in the Transition to a Low Carbon Economy

Description

For many observers, the outcome of the UNFCCC Climate Conference, held in Copenhagen in December 2009, proved disappointing. One of the outcomes of the conference that is often overlooked, however, was a broad agreement among the parties that global warming must not exceed two degrees Celsius over pre-industrial levels. According to the IPCC (2007) there is also a worldwide scientific consensus that this requires industrialized countries to reduce their emissions of greenhouse gasses by 80 to 95% by 2050, while emerging economies would need to embark on a low carbon development path.

While several studies have shown that this transition can be achieved at moderate overall cost, it does imply a substantial realignment of industry sectors within the global economy. An increase in carbon productivity will require substantial capital investment into the technologies needed for rapid decarbonization. The banking sector has not, on the whole, been a driving force behind the inflows of capital into the cleantech sector so far. Few banks today have an overall strategy for how to position themselves in the shift to a low carbon economy – a shift that brings substantial risks in terms of an unknown carbon exposure in banks' balance sheets, but also opportunities on a historical scale.

Credit Suisse and the WWF network, with academic support of the Swiss Federal Institute of Technology Zurich, teamed up in 2011 to evaluate possible business models for banks on how to address these issues. The idea was to develop a thoughtful publication addressing how banks will have to adapt to, and what role they will have in facilitating, the transition to a society that is more carbon-constrained than the society of today. Part of the study was to identify actionable options - both in terms of risks and opportunities - of how banks might strategically position themselves to profit from and support rapid decarbonization.

The findings of the study suggest, that, although many financial, technical and structural barriers need to be addressed by governments and regulations, banks can make a significant contribution towards decarbonisation beyond 'business as usual'.

The study was published in October 2011 and is available online: https://infocus.credit-suisse.com/data/product_documents/shop/324153/wwf_paper_low_carbon_economy.pdf

Initiating Organization

- Credit Suisse AG (<https://www.credit-suisse.com/ch/en/index.jsp>)
- WWF Switzerland (<http://www.wwf.ch>)

Geographic Scope

The findings of the report apply globally.

The working group consisted of members from the US and Europe, and was led by a project team based in Switzerland.

Experiences (Learning's) of Best Practice or Potential Goals of the Collaboration

By drawing on WWF's global resources and perspectives, Credit Suisse was able to better understand current environmental trends, their market impacts, and by implication the clients' needs.

For WWF, the collaboration has shed light on the question of how banks can make a significant contribution towards decarbonization, which goes far beyond 'business as usual', in the interest of their shareholders, clients and the planet as a whole.

And the integration of academia into the project offered a fresh perspective on long-debated issues. Also, it allowed to base assumptions and conclusions on sound scientific data.

A key finding of the study has been that a bank should define its own individual strategy with regard to decarbonization, as appropriate to its specific business model. Clearly, opportunities and risks will not be the same for all banks. A starting point should be a comprehensive assessment of risks and opportunities taking into account the bank's business model and its appetite to play a leadership role in this area. And this is certainly an area, which would lend itself to further cooperation between the private sector, society and academia.

Type of Partners Involved/Wanted

- Various experts at Credit Suisse
- Various experts at WWF Switzerland
- Experts at the Swiss Federal Institute of Technology Zurich

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

In order to be able to define success after the completion of the project, all partners involved need to agree on common objectives prior to the start of the collaboration. Once this has happened, it is crucial to have regular discussions during the entire project phase among the collaborators about the direction of the project, and whether each partner is pleased with the progress made vis-à-vis its individual objectives. If these conditions are met, all partners involved in the project should be satisfied with the results achieved.

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

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Deutsche Telekom

Helping to protect the climate with green IT

Deutsche Telekom AG is a telecommunications company headquartered in Bonn, Germany. It is the largest telecommunications company in Germany and in the European Union. As an international Group, Deutsche Telekom is represented in some 50 countries worldwide. More than half of its net revenue is generated outside Germany.

The Company employs some 260,000 people overall. Deutsche Telekom's goal is to make information and communication technologies (ICT) as sustainable as possible. To this end, the company optimizes the energy balance of its networks and IT infrastructure.

Product carbon Footprint / Group Wide Carbon Footprint

To design climate-friendly products and services, Deutsche Telekom participated in a Product Carbon Footprint pilot project. The carbon footprint is made up of all greenhouse gas emissions that occur during the manufacturing, usage and disposal of a product. During this project, Deutsche Telekom analyzed the entire life cycle of T Home's Call & Surf package. The analysis showed that most of the emissions generated by the DSL and fixed network package are due to router operations. Energy-efficient switched-mode power supply units can help reduce energy consumption at precisely this point. Many devices at Deutsche Telekom such as phones and routers are already equipped with this technology. In the future, the results of the pilot project could help to establish the use of standardized product labels that indicate each product's carbon footprint.

The Group-wide "Carbon Footprint" project was launched in early 2009, with the aim of creating a transparent representation of the carbon footprint throughout the entire value chain, both at company level, in relation to Deutsche Telekom's infrastructure and core processes, and at product level for all business area-specific core products.

Energy-efficient networks

T-Mobile modernized its mobile communications network throughout Germany in 2007. In the course of this change, it replaced its system technology and implemented the efficient Global System for Mobile Communications (GSM) network in over 20,000 base stations. The GSM network makes it possible to send data in the form of e-mails and images at high speeds via cell phone and, at the same time, saves up to 30-40 percent on energy.

Green data centres

Deutsche Telekom is the first company worldwide to test a biogas-powered fuel cell for use in data centres. At the T-Systems data centre in Munich, the fuel cell supplies computers and cooling systems with fully climate-neutral energy. The forage plants that are needed for biogas extraction are cultivated in the area around Munich. The facility is one of a series of projects that T-Systems has launched to ensure that data centres all over the globe can make as sparing use as possible of the available energy. In Singapore, a "green data centre" was inaugurated in 2008. The energy-efficient data centre operates with cutting-edge technology on an area covering almost 2,800 square meters. Water-based cooling systems for example ensure that cooling only takes place where it is needed. What is more, cooling with water makes it possible to operate without the harmful gases used in conventional cooling systems.

Dow

The Dow Chemical Sustainability Footprint Tool[®]

Description

The Dow Chemical Sustainability Footprint Tool[®] is a high level tool that can indicate the extent to which a product development project can contribute to a more sustainable world while simultaneously increasing the tool user's understanding of sustainability. The tool is based on the belief that the long term commercial success of a product development project is likely to increase if:

- the economics of value chain service provision to end users is improved;
- society is enhanced;
- the bio-sphere is conserved;
- humans are not harmed; and
- resources remain available.

Because engaging busy focused employees in a topic that they may know little about and where they may not fully understand the relevance to their specific business was seen as challenging, the Dow Chemical Sustainability Footprint Tool[®] was developed to have the following attributes:

- be self-explanatory;
- be easy and quick to use by R&D engineers or teams with limited knowledge of sustainability criteria;
- be applicable to all projects (including those with an internal focus; for example, manufacturing plant improvements);
- instantly communicate the sustainability advantages and opportunities in a visually engaging way;
- provide a record of what was considered when rating a particular sustainability attribute;
- be informative of sustainability criteria.

Also, the data from project evaluations can be easily compiled into reports that inform management about the sustainability status of a business's portfolio of product development projects as well as which sustainability areas are well represented and which remain areas of opportunity.

A paper has been published that describes the underlying concept in more detail:

Russell, David .A.M.; “Life cycle sustainability based innovation: tools for an integrated approach”; Proceedings of the Life Cycle Management Conference LCM 2011; Berlin, August 2011.

The paper can be downloaded using the following link:

www.lcm2011.org/papers.html?file=tl_files/pdf/paper/24_Session_LCM_in_the_Chemical_Sector/1_Russell-Life_cycle_sustainability_based_innovation-795_b.pdf

Initiating Organization

The Dow Chemical Company

www.dow.com

Geographic Scope

Global

Experiences (Learning's) of Best Practice or Potential Goals of the Collaboration

Experience to date shows **The Dow Chemical Sustainability Footprint Tool[®]** to be self explanatory, easy and quick to use. There has been a clear increase in the sustainability knowledge amongst those innovators who have used the tool. Also, the compiled results of these assessments are providing management with useful sustainability perspectives of their project portfolios that are allowing them to better track progress in addressing sustainability opportunities.

Type of Partners Involved/Wanted

Engagement at this time is restricted to key Dow customers and important members of Dow's value chains.

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

Broad implementation within Dow and increasing engagement in sustainability with key customers and important members of Dow's value chains.

Comments: Please list any additional Statements, messages or call for action you may wish to gather from the audience.

This tool has the multiple components of education, project evaluation and project portfolio management and has been deliberately focused at an entry level of user sustainability knowledge. Clearly, other versions of the tool may be developed to examine corporate rather than project aspects of sustainability, or for more sophisticated users who already have a grounding of sustainability knowledge.

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

Martina Bianchini
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Evonik Industries AG

Carbon Footprint Estimation Tool for R&D

Description

Evonik has developed a standardized method, called Carbon Footprint Estimation (CFE) for the quantification of potential climate change impacts for research projects in early stages of development. The CFE model allows a standardized evaluation of projects pertaining to their carbon emissions and savings in all phases of product systems and ensures that Evonik projects are screened according to a comparable set of criteria. It is especially useful as a reference method to determine the potential CO₂e_{q2} impacts or savings of projects in R&D departments. It is designed as a pragmatic approach based on ISO 14040/44 and the criteria of the GHG Protocol to support innovation processes with meaningful sustainability assessments, even in the early stages when uncertainty is still high.

Initiating Organization

Evonik Industries AG, Germany

Geographic Scope

Developed at Evonik Germany to be implemented globally in Evonik business units' R&D departments

Experiences (Learning's) of Best Practice or Potential Goals of the Collaboration

Three main risks arise:

Risk of incomplete data

Risk of poor data quality

Risk of badly chosen calculation approach

To cope with these risks, a separate handling procedure for each risk category has been created. The risk of incomplete data is handled by setting a preference for specific data sources in our internal guidance. The risk of incorrect results can arise when employing weak or unconventional calculation methods (e.g., inappropriate emission factors). One way of minimizing the risk of a well-thought-out but unattested calculation approach is to rely on established product category rules (e.g., within the industry, the lifetime/distance of a passenger car is set at 150,000 km or the daily operating time of a notebook is set at 8 hours). Evonik uses such product category rules whenever these are available.

Type of Partners Involved/Wanted

Upstream and downstream industry partners to create a continuous process of data quality improvement.

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

Commitment of all players. ie. Engineering, facilities, environment staff, R&D experts as well as the commitment to accept the created guidelines.

The CFE team consists of an instructor, practitioners, an inspector and a supervisor. It is required that at least two practitioners work together on the CFE – one LCA team member and one member of the project group for whom the CFE is performed. The inspector must be an experienced LCA team member and cannot also be a practitioner. The supervisor ensures an accurate workflow and grants the final approval of the CFE. The supervisor must be a person or consist of a board with the necessary authority to deploy the CFE results (e.g., for internal or marketing purposes). Both the

underlying CFE process and methodological requirements of the CFE model have been formalised in internal guidance documents.

Comments: Please list any additional Statements, messages or call for action you may wish to gather from the audience.

Another important aspect of the CFE methodology is the allocation of an appropriate share of emission savings during the in-use phase of product applications which are manufactured by Evonik customers further down the value-added chain. Two principles to allocate savings to the Evonik product application are possible. If the Evonik product is absolutely essential to generate CO₂eq savings, 100% of the savings are accredited to this product, hence an “enabler”. If the Evonik product is not exclusively essential for the CO₂eq savings, the savings are allocated by either a functional or a cost-share approach. Both calculation approaches are acceptable when accompanied by clear and reasonable justification.

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

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F. Hoffmann-La Roche Ltd

Roche Basel Energy Mission 2020

Description

Roche has realized that only environmentally and socially responsible companies can achieve sustainable development and financial success. Therefore Roche is strongly committed to minimizing its Group-wide environmental footprint and to contributing to a sustainable energy future.

To achieve the self-imposed objectives at the headquarters site, an energy mission statement has been developed, implementation of which started in 2005. The concept is based on three elements:

- **Reduce energy consumption,**
- Employ commercially available, **innovative technologies** to optimize energy consumption
- Use **energy from sustainable sources** to meet remaining energy requirements

In 2005, the overall energy consumption at Roche's headquarters site in Basel, Switzerland was 1.6 million GJ for fuel gas, electricity and business travel. This equals a European city of 30,000 people. When all measures have been fully implemented in 2020, the **environmental footprint** per employee will be improved by **50%** (measured as eco factors www.bafu.admin.ch/publikationen/publikation/01031/index.html?lang=en), **energy efficiency** by **35%** (measured as GJ per year and employee), and the **share of sustainable energies** in total energy consumption will be increased to **40%**. In absolute terms, 9 million m³ less fuel gas will be burned at the site. This results in **21,000 t** or 30% **fewer CO₂ emissions** per annum (equals 10,000 fewer cars on the roads).

Implementing the energy objectives means **reducing energy consumption** by a lot of different measures, such as using the waste heat generated by production processes to directly heat buildings in winter, installing energy-efficient office equipment and lighting systems, identifying deviations and areas with the potential for energy savings at the site by using a state-of-the-art energy measurement system, providing video conferencing facilities to avoid business travel or carefully optimizing energy parameters during commissioning of new production plants and facilities. High energy savings will be achieved by refurbishing all old buildings over the next years.

The largest overall potential for reducing energy consumption will be created by using **innovative technologies**. This can be very cost-attractive if implemented in a forward-looking manner: The shift from large-scale production towards the small-scale manufacture of highly active and sensitive pharmaceuticals and the availability of new air conditioning technologies has changed the energy demand pattern at the site. A few years ago large quantities of energy-intensive steam were required for the production processes and air humidification. The technology normally used to produce this steam was a gas burner. Today we require a similar energy quantity, but as tempered water for the state-of-the-art air conditioning systems in our production facilities and laboratories; very little steam is required these days.

Since 2005, all on-site cooling systems using CFC refrigerants have been replaced by new ammonia chillers. These large refrigeration plants can also be used as very efficient heat pumps (HPs) to produce cooling water and the required tempered water simultaneously. In addition, a gas-driven engine will co-generate power, tempered water and the remaining steam requirements. This combined heat and power generation (CHP) is extremely efficient and therefore ecologically worthwhile for as long as the international power grids are not supplied entirely from sustainable sources. Once all old buildings will have been refurbished and equipped with new air conditioning systems, the energy obtained from the HPs and CHPs will be sufficient to cover all the heating needs of the site for air conditioning as well as production.

The remaining energy consumption is covered by using energy from **sustainable sources** as far as this is feasible. The Rhine and process waste heat are used as sources for the heat pumps. Groundwater is used as the cooling medium for production, while low-temperature ambient air can be used for cooling in air conditioning systems. Electricity is purchased entirely from sustainable energy sources, mainly local hydropower.

Initiating Organization

F. Hoffmann-La Roche Ltd
www.roche.com

Geographic Scope

- Roche's sustainability goals and commitment apply to the entire Roche Group in all countries where we do business. This specific concept was developed and implemented for Roche's headquarters in Basel, Switzerland.

Experiences (Learnings) of Best Practice or Potential Goals of the Collaboration

- Forward-looking installations of innovative and sustainable energy systems can be highly attractive from the economic perspective (reduced consumption, risk mitigation) in the case of business-driven investments if opportunities due to changed conditions and new technologies are exploited.
- Engineers with an excellent knowledge of both production process requirements and energy generation/distribution systems are key.

Type of Partners Involved/Wanted

- Several industry partners are involved as vendors of new technologies and systems.
- Local authorities as supportive partners and several Bachelors and Masters theses by students at university institutes provided important input.

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

- Availability of highly educated engineers
- Acceptance of holistic assessment of measures – the environment does not recognize site borders
- Solution oriented co-operation with communities and authorities
- Management and shareholders who support this long-term thinking

Comments: Please list any additional Statements, messages or call for action you may wish to gather from the audience.

- We all need to recognize that a company can only achieve sustainable success when our environmental and social responsibilities are met.
- Long-term prosperity for future generations can only be assured if we succeed in using our available environmental resources in a sustainable and renewable manner.
- The required technologies need to be further developed and investigated.
- We need to invest in the education of the necessary scientists and engineers.

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

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Dr. Peter Schnurrenberger peter.schnurrenberger@roche.com

GDF SUEZ

Better energy efficiency thanks to a long-term, large scale and mixed solution

2008 was marked by significant progress in social and environmental issues: In Europe the energy – climate package was adopted by the 27 Member States; in France, the Environmental Grenelle commitments started to be put into actions; in the United States, the Federal government has demonstrated a renewed interest in reducing greenhouse gas emissions. This year was also marked by the vast economic crisis which had a world-wide impact. It should have served to remind us that we urgently need to change our individual conduct and rethink the social model on which such conduct is based.

The importance of reconsidering our priorities must be added to the list of other challenges that we should have addressed some time ago, but for which we have simply been taking stock:

- Ensuring that populations have access to basic essential services such as energy, water and sanitation;
- Climate change with the now obvious consequences;
- The depletion of natural resources and the need to promote a circular economy;
- The security of supplies to regions and the reduction of energy dependence on third parties.

GDF SUEZ considers these challenges to be an opportunity to implement increasingly innovative solutions to contribute to more sustainable and responsible overall growth, since our ambition, which lies at the very heart of our industrial vision, has always been to become a benchmark for sustainable development.

The activities of GDF SUEZ, as a provider of public utility services to cities and companies around the world, lie at the heart of these challenges; it is duty bound to respond to the problems experienced by its clients on a daily basis. These constitute the mission and objectives of GDF SUEZ's business activities, which, by their very nature, will always be integral to a sustainable form of development, whether it involves supplying energy and energy efficiency services, environmental services, or water, sanitation and waste management services.

Improving the energy and environmental performance of Rome: An example from Cofely activities.

Cofely, the energy and environmental efficiency services company of GDF SUEZ, designs, realizes, and operates long-term solutions that meet the energy needs of businesses and public authorities, improve the performance of their installations, and enhance their assets, while ensuring optimal service and reducing their environmental impact. With close to 35,000 employees active in more than 15 countries, Cofely generates revenues of around EUR 8 billion. Well-established in Italy, Cofely is simultaneously involved in three major jurisdictions: the city and province of Rome, and the region of Latium.

Japan Facility Solutions (TEPCO Group)

Providing Energy Efficiency as a service

Japan Facility Solutions (JFS), a TEPCO group company, is a leading ESCO actively promoting energy efficiency in large buildings such as commercial complexes, universities and office buildings. JFS guarantees a certain level of cost reduction through energy savings with a performance contract, along with the corresponding reduction of CO₂ emissions. If the guaranteed reduction of energy costs is not achieved, JFS compensates for the shortfall. This means that customers can realize energy saving and CO₂ reduction at virtually no risk

Over the past eight years, JFS has implemented more than 80 ESCO projects, and in 2008, it achieved annual reductions of CO₂ emissions totaling approximately 26,600 tons. In 2007 and 2008, JFS won the first award of excellent ESCO projects held by the Energy Conservation Center, Japan.

An example of a successful ESCO-project: Tokyo Metropolitan Hiroo General Hospital

The project at Tokyo Metropolitan Hiroo Hospital is one of the most successful ESCO-projects proposed and implemented by JFS.

In October 2005, the hospital made a 6-year guaranteed saving contract with JFS, which stipulated an energy consumption reduction of 28.2% and a targeted utility cost reduction of 72 million yen per year at construction costs for the renovation amounting to 310 million yen.

Various energy saving techniques were applied, such as optimizing cool and re-heat process in double-coil air handling units (AHUs) to reduce air-conditioning load, renewing refrigerators from conventional chiller to inverter chillers, introducing free cooling system, and increasing the efficiency of transporting heat through various controls.

Results

Thanks to the renovation, the annual performance factor of the heat-source system has become approximately twice as high as before. The achieved energy consumption savings in the first fiscal year 2006 exceeded the targets. 114% achievement was made in primary energy consumption; 116% achievement in CO₂ emissions; and a more than 82 million yen reduction in the utility costs.

Government measures to support the ESCO industry

The Japanese government has introduced supportive measures for ESCO projects through subsidies, low-interest loans and tax incentives (the Tax Incentive System for Promotion of Investment in Reformation of Energy Supply and Demand Structure). The New Procurement Law for the Environment, enacted in 2007, encourages authorities to procure ESCO services for public buildings, for which contract periods can be extended to 10 years. These measures are expected to promote and activate the Japanese ESCO market further.

Martin Brower, Brazil

Recycled cooking oil used for transport refrigeration

Description.

Thermo King, a business unit of Ingersoll Rand (NYSE: IR) and McDonald's distributor Martin-Brower teamed up to reduce carbon footprints in logistics by using recycled cooking oil to help run refrigeration trucks and units. Special Thermo King refrigeration units use biodiesel fuel made from recycled oil that McDonald's had used to cook fried foods. The overall system is a closed-cycle process that brings efficiencies to the transportation of perishable goods and supplies to McDonald's restaurants. Brazil is the first location for this innovative closed cycle process, initiated by the local Martin-Brower team.

Initiating Organization

Martin Brower, Brazil <http://www.martin-brower.com.br/>

Geographic Scope

Regional

Experiences (Learnings) of Best Practice or Potential Goals of the Collaboration

The innovative closed cycle process for turning used cooking oil from McDonald's into fuel for their trucking fleet began in 2008 with concept development and planning. Pilot testing occurred from 2009 to 2011, with 20 restaurants and 7 trucks. Next, analyses, rollout planning, and preparing for regulatory authorization are in process, with full rollout expected to start in 2012.

The concept is simple: When transporting McDonald's supplies, the truck also carries empty containers to be filled with used cooking oil. The driver leaves the empties and takes the used-oil-filled containers, then brings them to a processing plant where the oil is transformed into biodiesel fuel to be used in the trucks and refrigeration units.

- Thermo King plays a key role as supplier of the refrigeration units on the trucks and is the industry pioneer for biodiesel use in this arena.
- The first truck, on the road since 2008, has a Thermo King TS Spectrum refrigeration unit, and runs on B20 fuel – standard diesel oil that includes 20% of the biodiesel made from recycled oil.
- The Martin-Brower/Thermo King team is currently working on using B100

(100% biodiesel oil) for trucks.

Challenges included developing and implementing processes for this pilot program (how to collect and filter the used oil, determining the correct amount of biodiesel for the trucks, and more) and getting people engaged and trained.

Type of Partners Involved/Wanted

Martin-Brower turned to Thermo King for support, research and development regarding the latest refrigeration technologies and processes. Several other companies are also partners in this project: ATA, Shell, Volkswagen, Tiete, Cummins, MWM, TeK Diesel, and SP Bio.

Conditions for Success/Success Factors:

There are significant, measurable cost and environmental benefits from this biodiesel program. To date (July 2011), Martin-Brower is on target to reduce diesel usage for trucking to and from McDonald's restaurants throughout Brazil by 28% by 2013. In addition, biodiesel yielded from this process costs about 10% less than mineral diesel.

This closed cycle process will contribute to standardization, improved quality assurance, and increased safety in used oil disposal for McDonald's. Along with the trucks, the refrigeration units

provided by Thermo King play a large role in Martin-Brower getting Carbon Credits in the Clean Development Mechanism (CDM) from the Kyoto Protocol. Overall, using biodiesel reduces greenhouse gas emissions, and reduces harmful sulfur emissions. Future growth will demand continued engagement from the entire value chain with a focus on workforce training, as this innovation demands “hands-on” changes from business as usual for a number of actors.

Comments:

This case study is an excellent example of the power of bringing together an entire value chain to arrive at an innovation in sustainability.

Benefits: Used cooking oil, if not properly treated, can strongly hurt the environment - one liter of oil can contaminate approximately 5,200 gallons/20,000 liters of clean water. The Martin Brower biodiesel project helps provide a better destination for the used cooking oil.

McDonald’s and Martin-Brower plan to donate a portion of the cost savings from this program to Ronald McDonald House Charities in Brazil.

Provide name of focal point for this engagement:

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Microsoft and Fiat

Reducing CO2 emissions by influencing drivers' behavior

Fiat is an Italian automobile manufacturer, engine manufacturer, financial and industrial group based in Turin, Italy. Fiat-based cars are constructed all around the world, and as of 2009, Fiat is the world's 6th largest carmaker as well as Italy's largest carmaker. Today the company works with almost 200,000 employees around the world and its global annual revenue is about US\$87 billion. Since 1995, Microsoft's Automotive Business Unit has worked collaboratively with the auto industry to deliver technology designed for advanced in-car information, navigation and entertainment systems. In 2007, Fiat Group Automobiles and Microsoft Automotive Business Unit announced a new system that enables drivers to minimize their impact on the environment: EcoDrive.

Talking directly to the driver

EcoDrive is an innovative, easy-to-use application developed by Microsoft for Fiat cars that analyses a person's driving style and gives instructions on how to consume less fuel, reduce CO2 emissions and save money. Automakers have made tremendous progress in reducing auto emissions. Today's cars create far less pollution and emit far less carbon dioxide compared with those made a decade ago. Much of that progress is due to in-car computers that adjust fuel flow or air intake. But those computers talk only to other hardware components in the car. What if the car could talk to drivers and enlist their aid to reduce emissions? That is the idea behind EcoDrive, developed with Microsoft technology, it is the world's first device that interacts directly with drivers and can help them change their driving habits in ways that can reduce auto emissions. With EcoDrive, Fiat and Microsoft have developed a method to monitor motorist behaviour on the road and offer analysis and advice after a trip is completed.

Raising consumption awareness

EcoDrive is built on Blue&Me, a Bluetooth-based system developed jointly by Fiat and Microsoft that assesses the driver's driving style during a normal driving day. The way a driver accelerates, brakes, and shifts is automatically measured and analyzed against the car's fuel economy and exhaust emissions. At home, the driver removes a standard USB flash drive from a USB port on the dashboard or the glove compartment, plugs it into a computer and downloads information about his or her most recent driving excursion. A software application then tells the motorist how many pounds of emissions the car produced during the most recent drive and how the driver can reduce those emissions by driving in a more environmentally friendly way.

Outcome: significant emissions reductions through better driving habits

A typical Fiat—already among the most environmentally friendly cars in Europe—emits about 150 grams of CO2 per kilometre, or about 2 metric tons in a typical driving year. This makes an annual reduction of nearly 400 kilos of CO2 possible. Motorists also can reduce fuel consumption and save money. EcoDrive illustrates the potential of software technology to reduce auto emissions worldwide. In the U.S., for instance, automobiles account for about one-quarter of annual emissions of CO2, the gas primarily responsible for global warming. The reduction of emissions by 20 or even 10% through better driving habits would make a huge contribution to automakers' efforts to produce more environmentally friendly cars.

A better energy efficiency thanks to a long-term, large scale and mixed solution

In 2008, Cofely won two new contracts from the city. The first was for 940 heating facilities for day-care centers, schools, retirement homes, offices and others. It followed an RFP where technical criteria were the most important factors in the decision. With the eternal city reflecting growing sensitivity for the environment, Cofely was able to orient its proposals toward renewable energy, which made all the difference. The installation of photovoltaic panels and a cogeneration plant will reduce CO2 emissions by 600 metric tons, and a savings of 260 tep.

The second contract covers the renewal of a management contract for 230 buildings. Cofely's contract was renewed thanks to an efficient solution combining the installation of gas-fuelled condensing boilers, integration of renewable energy (solar heating and photovoltaic panels), and the use of innovative remote control technologies. Also important was Cofely's demonstration in the previous contract to building occupants of high professional and relational qualities, in addition to the excellent performance of its facilities. Photovoltaic electricity is also programmed for the new contracts let by the Province in 2008. Since May 2007, Cofely leads a joint venture providing facilities management services for 12 buildings where solar panels were successfully installed to improve energy and environmental efficiency. That experience led the customer to carry it further. Now 63 buildings will be equipped with solar panels. On a yearly basis, a total of 75 sites avoid 323 metric tons of CO2 emissions, and spare 135 tep.

Finally, Cofely's technical expertise in renewable energy enabled it to win an RFP issued by the Region against six competing proposals. The contract calls for renovating 21 facilities and installing solar panels on the roof of the Region headquarters.

Novozymes

Use of Lifecycle Assessment (LCA) as a guide towards sustainability and as a communication tool for environmentally friendly products and solutions

Description

LCA is an environmental assessment tool which can be used to compare the environmental impact of two or more products or solutions. LCA can be used to compare existing technology with new technology and give us a quantitative indication of the advantages or disadvantages of implementing the new technology.

Initiating Organization

Novozymes has used LCA to document the environmental advantages of its products and solutions for the past seven years. Our LCAs address a broad spectrum of industries; household care, animal feed production, textile production, food and beverage production, etc. Novozymes LCA studies are published and can be found here: [link](#)

Geographic Scope

Global

Experiences (Learning's) of Best Practice or Potential Goals of the Collaboration

LCA results have created a lot of awareness of Novozymes products because sustainability is high on global agenda in these years and our technology saves water, chemicals energy and raw-materials when they are implemented in industry and therefore reduces contribution to climate change etc.

Type of Partners Involved/Wanted

We have engaged with suppliers, customers, NGOs, Universities, National and international governments and forums etc.

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

Global awareness of sustainability has been a major driving force. Helping to meet growing demand for truly sustainable products and solutions is also a prerequisite. Deep engagement and support from top-management and colleagues throughout the organization side has been crucial, as has having a Dedicated LCA team with significant experience plus access to LCA tools and databases.

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

Justin Perrettson (jdpo@novozymes.com)

Novozymes A/S and CleanStar Ventures

CleanStar Mozambique - building a Biobased Economy

Description

Since 2008 **Novozymes** has sought to engage in high-growth frontier markets. Initial studies indicated an interesting opportunity in developing sustainable agriculture to increase food production as well as produce feedstock for ethanol production to replace charcoal as cooking fuel in urban households. Replacing charcoal with ethanol has wide-ranging benefits. Today, indoor air pollution causes an estimated two million deaths per year and sickens millions more – mostly women and small children. In addition to the health impacts, nearly a third of Africa's seven million square kilometres of forest has already been burned for charcoal, stripping the continent of vital biodiversity and contributing majorly to the projected 6.7 billion tons of greenhouse gasses that household energy use in Africa is expected to emit into the atmosphere by 2050.

In late 2009 Novozymes met **CleanStar Ventures**, who had similar interests in agriculture, food and energy – but also an interest in forestry. Following joint feasibility studies the companies combined business ideas and co-invested in the newly-formed **CleanStar Mozambique** in August 2010. CleanStar Mozambique is now helping smallholder farmers in Sofala province implement an environmentally restorative agroforestry system on their own land. Whatever the families do not consume themselves, they can sell to the company, thus drastically improving their nutrition levels while also more than tripling their incomes. From the surpluses sold to the company, the company will produce a range of food products as well as an ethanol-based cooking fuel. These will be sold into urban markets – notably Maputo. Once the trees have reached maturity in approximately five years, the company will also produce a substitute for imported diesel based on the oilseeds of the trees. In practice, the venture provides the farmers with all the necessary training and inputs to implement the agro-forestry model designed for the venture (at no cost to the farmer) on land that they own but have abandoned, having already exhausted the soil nutrients. The agro-forestry model includes various trees and crops, such as cassava. It is designed to rehabilitate the soil and does not require ongoing inputs aside from labour.

Farmers take their surplus production to (and receive payment from) the nearest 'community processing centre' (CPC), which is nearby and is built and operated by the company. The centres also serve as the points where farmers get planting material for each new season (also at no cost). At the CPC some processing is done of the various agricultural products. The semi-processed goods are then trucked to the central bio-processing facility in Dondo, near the city of Beira, where the final processing is done to make the various food products and the ethanol-based cooking fuel. Alongside Novozymes and CleanStar Ventures the business brings together a range of partners, most notably the engineering group **ICM, Inc.** that is providing the ethanol plant and **Bank of America Merrill Lynch** that has entered a cutting-edge carbon financing agreement with CleanStar Mozambique.

By 2014 the venture will involve 3,000 smallholders over 6,000 hectares, operate seven community pre-processing centres, and supply 20 percent of Maputo households (approx. 80,000) with cookstoves and fuel – thus protecting 4,000 hectares of indigenous forests per year. This is when CleanStar Mozambique is expected to have reached profitability. At this point the venture will expand significantly in Mozambique as well as promote replication efforts in other suitable markets via an open-source business model approach.

Initiating Organization

Operating entity:

- CleanStar Mozambique (www.cleanstarmozambique.com)

Initiating organizations:

- Novozymes A/S (www.novozymes.com)
- CleanStar Ventures (www.cleanstarventures.com)

Key partners:

- ICM, Inc. (www.icminc.com)
- Bank of America Merrill Lynch (corp.bankofamerica.com)

Geographic Scope

CleanStar Mozambique currently operates in the Sofala and Maputo provinces of Mozambique. Once the venture has reached profitability (projected in 2014) operations will expand to other provinces. Also, replication efforts will begin in other Sub-Saharan markets. The market dynamics underlying the business are common to many cities in the region. Over 50 cities are estimated to be experiencing similar conditions to Maputo, with increased urbanisation driving deforestation-based charcoal – the price of which is rising to the point where ethanol is a competitive alternative.

Experiences (Learning's) of Best Practice or Potential Goals of the Collaboration

It has required significant business model innovation and openness to new types of partnerships for this project to reach where it is today. It is important to think in terms of *creating* markets rather than just *servicing* markets. It is also important to keep the whole value chain in mind, being prepared to find ways to fill the “institutional voids” that are commonplace in frontier markets. This will often require establishing uncommon partnerships. Both business model innovation and openness to new partnerships will be required of any organization seeking a role in building a sustainable business at the Base of the Pyramid to promote inclusive growth.

Type of Partners Involved/Wanted

Aside from partners mentioned above CleanStar Mozambique is currently engaged with:

- Dometic: ethanol stoves producer (www.dometic.com)
- Zoe Enterprises: Mozambican company with experience in marketing stoves and fuel
- Cornell University: assisted in developing a marketing and distribution strategy for the clean cooking solution in Maputo (www.johnson.cornell.edu/Center-for-Sustainable-Global-Enterprise.aspx)
- Yale University (School of Forestry & Environmental Studies): helped with Life Cycle Assessment work (<http://environment.yale.edu>)
- Impact Carbon: supporting with the assessment of carbon potential (<http://impactcarbon.org>)

Conditions for Success/Success Factors: briefly describe what is needed to grow this project for future success

A number of things are required/helpful for the CleanStar Mozambique business model to rapidly scale and replicate across target markets:

- Core/international partners must have the capacity to scale and replicate rapidly (has been ensured)
- Local partners in each target market will have to be identified (expressions of interest already coming in)
- It would be helpful if governments in target markets offered permanent VAT exemption on cooking fuel (as is the case for charcoal, which is an informally traded good)
- It would also be helpful if governments offered import duty exemption on the cooking fuel (necessary to build up local market demand before installing local production capacity)
- Governments must not impose irrational blanket restrictions on e.g. the crops that may be used to produce ethanol (as opposed to studying project proposals on a case-by-case basis)
- Governments should be careful not to establish unnecessarily cumbersome approval processes (“Doing business” in World Bank parlance), causing companies to run into cash-flow problems
- Governments should combat corruption

Comments: Please list any additional Statements, messages or call for action you may wish to gather from the audience.

The long term ambition of the venture partners is to fundamentally impact African agriculture, food and energy – significantly improving lives while also helping build a more sustainable foundation upon which the rest of the economy can develop and grow. In this view CleanStar Mozambique is a clear example of a ‘biobased economy’, where sustainable agriculture provides the necessary biomass to

meet local needs for food, feed, fuel and materials – while restoring the environment and driving rural development. Biobased economies will look slightly different from place to place, but fundamental principles remain the same: shifting the resource base away from fossil oil to sustainable biomass while increasing food production and enabling green growth.

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

Mr. Stefan Maard (stmr@novozymes.com)

Shell

Road Infrastructure with Reduced Environmental Footprints

Description

Shell has developed a number of road asphalt technologies that can result in reduced energy consumption at the asphalt mix plant, and consequently reduced emissions of GHGs and of combustion-related air pollutants. Shell has had independent life cycle analyses (LCAs) performed to validate the environmental benefits of its various road technologies. Shell with its partners has performed dozens of pilot and demonstration projects and an increasing number of larger projects with its range of warm mix asphalts (WMAs) with the intention to reduce CO2 emissions.

A review of the literature indicates that the use of WMA vs. conventional hot mix asphalt (HMA) yields reductions in the emissions of carbon dioxide and sulfur dioxide of 30% to 40%; of 50% for volatile organic compounds; of 10% to 30% for carbon monoxide; of 60% to 70% for nitrogen oxides; and of 20% to 25% for dust

Shell Thiopave is a road paving technology that enables approx. 20% of the asphalt in the road to be displaced with sulphur, resulting in increased resource efficiency, and the displacement energy and associated emissions related to the production of road asphalt at the refinery.

Because it is a WMA, it also offers the benefits mentioned above of reduced energy consumption and reduced emissions. See: http://www-static.shell.com/static/sulphur/downloads/thiopave_general.pdf

Shell's Thiopave technology forms the basis of the carbon offset methodology approved by the government of Alberta, Canada. The ISO-based carbon offset system in Alberta reviews the net environmental benefit of a given technology on a life cycle basis. This methodology can now be used to generate compliance-quality carbon credits under Alberta's GHG regulatory system.

An offset methodology based on the above methodology has just completed its first round of public review under the Verified Carbon Standard (VCS) system. It is now in the process of being validated

Initiating Organization

Shell Downstream Specialties Business / Shell Bitumen
<http://www.shell.com/home/content/bitumen/>

Geographic Scope

These asphalt technologies may be applied anywhere in the globe, and have been tested in a range of hot, temperate, and cold conditions. They may be applied to all manner of roads (municipal, highways, etc.); airport runway; bike lanes; etc.

Experiences of Best Practice or Potential Goals of the Collaboration

Factors contributing to project success:

- Technology performed as predicted/promised
- Willingness of authorities to try a newer technology
- Good operating practices during project construction
- Good data and record collection/maintenance
- An environmentally friendly technology alternative

Areas for improvement:

- ease of data collection will improve with increased use of the products

Anticipated Goals from Proposed Collaborations:

- increased familiarity with Shell Thiopave and other WMAs will result in their being used more, and ideally will enable WMAs to become business as usual in some regions/applications
- increasing amounts of emissions reductions and increased resource efficiency compared to business as usual approaches

Type of Partners Involved/Wanted

- Road specifying agencies
- Cities / municipalities
- Airport authorities

Conditions for Success/Success Factors:

- Acceptance by specifying agencies of warm mix asphalts such as Shell Thiopave
- Commitment to using sufficiently large volumes of the technology in a sufficiently large no. of projects to make a sufficiently noticeable environmental impact

Provide name of focal point for this engagement:

Doug McKay
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The Mexico GHG Program

A Nationwide Voluntary Agreement

Mexico is the world's fifth biggest oil exporter, and second only to Brazil in greenhouse gas (GHG) emissions in Latin America. Its government recognizes that adapting to a carbon-constrained world is both a strategic risk and opportunity for the country's economy. In 2004 the government sought to mobilize business action and launched the Mexico GHG Program. Following the maxim that you cannot manage what you cannot measure, the program was set to encourage companies to voluntarily map their emissions.

A multilateral collaboration

The program was launched through a three-way collaboration between the government environment ministry SEMARNAT, the WBCSD's Regional Network partner BCSD Mexico and the WRI/WBCSD GHG Protocol team.

In 2007, there were 54 participating companies, of which 35 had reported their emissions. The reported emissions cover approximately 35% of the industrial emissions across the Mexican economy. Members include both Mexican headquartered multinationals such as CEMEX, and Grupo Bimbo, the Mexican arms of multinational companies such as Sumitomo, Caterpillar, Holcim and Ford, as well as local firms and public bodies. Participation is focused on the most-energy intensive sectors and includes the entire cement and petroleum sectors, as well as major representatives of the iron and steel sector.

Providing tools for GHG measurement

The Mexico Greenhouse Gas (GHG) Program enables companies to prepare a GHG inventory that represents a true and fair account of their emissions, and that can be used to build an effective strategy to manage and reduce emissions. The initiative reduces the cost and complexity barriers to compiling GHG inventories, helps increase transparency, and ensures that GHG measurement is consistent with internationally recognized measures, enabling participating companies to stay "ahead of the curve" in anticipating and addressing GHG-related risks and opportunities.

Key activities of the Mexico GHG Program include:

Translating the GHG Protocol Corporate Standard and associated guidance into Spanish.

Hosting awareness raising and training workshops to introduce Mexican companies to the standard.

Providing in-depth workshops, and ongoing coaching and support to companies committed to implementing the standard.

Developing specific accounting and reporting specifications customized to Mexican industry needs.

Publishing participating company GHG inventories on the project website.

Hosting public recognition events for companies reporting on their emissions.

By providing an opportunity for companies to work closely with the government in implementing this voluntary program and designing a national climate change strategy, the program has created a new incentive for them to engage on the policy developments needed for Mexico to remain competitive in a carbon-constrained world.

Vattenfall

The world's most efficient coal-fired Combined Heat and Power Plant

Vattenfall's vision is to be a leading European energy company; our main products are electricity and heat. We work in all parts of the electricity value chain: generation, transmission, distribution and sales, and generates, distributes and sells heat. Vattenfall also conducts energy trading and lignite mining. The Group has approximately 39,000 employees. The Parent Company, Vattenfall AB, is 100 per cent owned by the Swedish state.

We have operations in Sweden, Finland, Denmark, Germany, Poland, the Netherlands, Belgium and UK with a total of 7.4 million electricity customers and 5,6 million network customers.

Our strategic direction is clear, and can be summed up in three words: Making electricity clean. In a nutshell, these three words express Vattenfall's climate vision: to be a climate-neutral company by 2050.

Power plant efficiency

Energy efficiency is one of the most important environmental aspects for us at Vattenfall. Improved efficiency in power plants and distribution grids means that society's need for energy will be met while using fewer resources and causing less environmental impact per generated unit of energy.

We are continuously investing in modern technology, higher safety and better environmental performance in our power plants. We also replace old plants with new, modern and more efficient ones. These new power plants will have significantly better operating efficiency and environmental performance compared to older plants.

Nordjylland power station

The Nordjylland Power Station in Denmark, fired by coal, can produce 656 MW electricity and 542 MW heat. Cogeneration of electricity and district heat ensures optimum fuel utilization. The plant consists of two units, both run with a constant environmental focus.

As early as 1992, Unit 2 was awarded the international McGraw award for the world's first full-scale SNOX facility. One of the by-products from this type of treatment is almost 100 per cent pure sulfuric acid that is used in the fertilizing industry.

Unit 3 at the Nordjylland plant is the most effective coal-fired plant in the world, with 91 per cent efficiency when producing both electricity and heat. Unit 3 removes NO_x, fly ash and sulfur from the flue gas. The fly ash is utilized in the cement industry, and the sulfur is turned into gypsum that is used for industrial purposes thus reducing imports of natural gypsum.

Compared with older generating facilities, Unit 3 produces much more electricity and district heat on the same amount of fuel. And the more efficiently every kilo of coal is utilized, the less CO₂ is emitted, and the lower the production costs are. In that fashion, Nordjylland Power Station duly considers the environment, our heating and the electricity bills.

Veolia

Zero Carbon-Zero Water Discharge Veolia Project at Renault Green Plant in Tangier (Morocco)

Description

Renault Tangier is the first automotive plant in the world with both zero carbon and zero water discharge.

Zero carbon

The zero carbon solution is based on three consecutive actions: **1.** The plant energy consumption has been reduced by VEOLIA from its original estimation in the plant dimensioning; this was made possible thanks to Veolia's expertise in operation and maintenance of energy plants in others automotive plants. **2.** VEOLIA and RENAULT together sought, in association with the automotive paint-shop suppliers, technical solutions to recover energy otherwise wasted from this shop and use it in the plant industrial process. **3.** At the end, the remaining consumptions for the industrial process were provided by renewable energies: VEOLIA designed, built and operated a biomass-fuelled power plant (18MW). **Result: 98% CO2 emissions decrease.**

Zero water discharge

VEOLIA designed, built and operated a water recycling process based on a combination of technological solutions. The solution allows transforming effluents produced by the process into demineralized water which is re-used for process needs. **Result: no discharge of industrial waste water in the environment and 70 % decrease of water resources taken for the industrial process.**

Initiating Organization

VEOLIA ENVIRONNEMENT
<http://www.industries.veolia.com/en/>

Geographic Scope

TANGIER (MOROCCO)

Experiences of Best Practice or Potential Goals of the Collaboration

Success keys of the Best Practice:

1. A VEOLIA - RENAULT collaboration at the very beginning, i.e. as soon as Renault decided to build a green automotive plant, was crucial for the project.
2. The RENAULT-VEOLIA team worked very closely. The combination of the VEOLIA environmental expertise and the RENAULT automotive process know-how was essential to find the best environmental solutions with no adverse impact on the automotive process performance.

Type of Partners Involved/Wanted

Moroccan Home Office

Local authorities :

- Commune MELLOUSSA
- Province FAHS ANJRA
- Willaya TANGER-ASILAH
- Province LARACHE

Waters and forest national office

Agriculture laboratory

Local forestry companies

Moroccan INRA (agro research)

Moroccan olives transformation company large and small (AICHA,...)

Comments: Please list any additional Statements, messages or call for action you may wish to gather from the audience.

RENAULT and VEOLIA transformed an industrial project in a Green Economy project. This approach allowed the development of new skills in Morocco, the creation of a new rural activity (crops for plant bio-energy) complementary of an also new industrial activity (car production), and the enhancement of the local population environmental awareness.

Provide name of focal point for this engagement: This person is in charge of any follow up and future dialogue.

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