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UTILITIES PRACTICES TOWARD SUSTAINABLE DEVELOPMENT

Working Group
C3.03

February 2008

WG C3.03

Utilities practices toward Sustainable Development

February 2008

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A very broad definition of Sustainable Development, from now on referred also simply as SD, (Bruntland Commission, 1987) could be as follows: "*a development that will guarantee to the next generations the same levels of opportunities, welfare, prosperity and availability of resources that we have today*".

For Electric Utilities, Sustainable Development is a very wide concept, that includes Environment, Economy and Society (the three "pillars" of SD), and that affects the entire "value chain" of electric sector, i.e. generation, transmission and distribution, together with the final use of electricity.

Electricity is more than energy: it is a vital component of infrastructures and an essential part of modern day life, playing a major role in the economies of most countries. Electrification has been the major factor in cleaning up cities, improving the efficiency and productivity of industry and business, and improving the efficiency of natural resources consumption. While some two billion people around the world still do not have access to electricity, electricity increased its share of energy consumption (during the 20th century) to nearly 40% in the OECD Countries.

Despite this vital role of electricity in the modern world, some very important challenges are to be faced by Electric Utilities in the achievement of Sustainable Development, namely:

- to find innovative ways to integrate SD practices into existing operations
- support future energy options that meet the expectations of stakeholders as well as the sustainability needs.

The scope of work for the WG C3-03

The sustainability strategy followed by Electrical Utilities is far from being standardised and a first useful and necessary step is to collect and compare information about their approaches in order to identify trends and best practices and to establish a reference framework.

Therefore, it was decided to analyse a number of Sustainability Reports published by Electricity Utilities (or, in the absence of Sustainability Reports, the Corporate Responsibility, Social or Environmental Reports).

This analysis has been followed by the collection of some "case studies", from the Utilities represented in the WG and/or contacted by SC C3 Members, relevant to the three "pillars" of Sustainable Development, namely Environment, Society and Economy.

Sustainability Reports analysis

Eleven Reports have been provided by WG Members. It should be noted that there is quite a spread in reporting periods – some of the collected reports date back to 2003 while others refer to the year 2005. It is very likely that some, if not the majority of the participating companies will have improved reporting in the two years since the work was started.

The geographical coverage of the analysis was largely "Eurocentric"; the distribution of the eleven is in fact as follows:

- six from (Western) Europe
- two from North America
- two from Japan
- one from Africa.

In our sample there are four vertically integrated utilities, covering all the sectors of Generation, Transmission, Distribution and Sales of electricity; one operating in the Transmission sector only, with the remaining six covering different sectors.

In the following pages the analysis of the collected reports is shown.

Investors, NGOs and regulators are exerting pressure on companies to report on sustainability. International standards (such as ISO14001), the Global Reporting Initiative (GRI) and the Global Compact (United Nations) are increasingly used by companies to do such a reporting. The interest

in sustainability issues by the financial market has continued to increase and has resulted in the launch of sustainability indexes including the FTSE4Good Index, Business in the Environment Index and the Dow Jones Group Sustainability Index.

Eight of the eleven utilities considered have published a Sustainability or a Corporate Responsibility Report. The same number refer, in their reports, to the GRI Guidelines, that constitute now a recognised standard in this field. Eight of the eleven Utilities (but not the same eight as before) also submitted their report for "third party verification", that appears now as a normal practice.

All the Utilities operate, or are implementing, an Environmental Management System (EMS), according to the ISO14001 Standard (some of them certified according to the Standard).

In the analysis the three main "pillars" of Sustainable development have been taken into account, namely: Environment, Economy and Society.
For each of these three main areas, the main topics covered by the reports have been analysed, trying to summarize the approach used by the different utilities.

Environmental aspects

The following topics have been analysed:

- Reduction of environmental impact of operations
- Greenhouse gases policy
- Renewable energy sources (RES)
- Resources consumption and energy efficiency

Actions dealing with the Society

- Support to key social programs
- Stakeholders consultation
- Support ethical business practices
- Promote health, safety and employee welfare

Actions on the Economy side

- Support to R&D
- Support to business development
- Policies to improve the supply chain

"Case Study" analysis

The Sustainability Reports published by the Utilities normally present a balance of corporate actions, indicators and results in a general way. Additionally, in almost all publications, the focus of the report and the methodologies of analysis used do not allow the visualization of specific voluntary actions conducted by the companies to collaborate with society towards the sustainable development.
Therefore, a survey has been conducted in order to obtain form Power Utilities some descriptions of their experiences on sustainable development - process, action or program - showing examples of practices adopted. These experiences, as a specific dimension of the sustainable development, can become ideas for other utilities as well as constitute "something that can be learnt".
The WG C3-03 received 15 "case study", each presented used the **STAR** methodology, that consists in the description of:

- **S**ituation
- **T**arget to be achieved
- **A**ctivity performed and/or envisaged
- **R**esults obtained and/or expected

All the cases received, with no selection among them, were organized by country and by subthemes, relevant to the three "pillars" of Sustainable Development, as E*nvironment*, *Society* and

Economy. It was considered that the diversity of examples can contribute to shown the adaptation of a specific reality.
It is interesting to emphasize some general characteristics of the experiences reported in the "case studies":

- They are voluntary actions developed by utilities;
- They are not intended to satisfy legal requirements nor to ensure compliances with certification processes;
- They are adapted to the context where the utility operates, to the situation of the country and the characteristics of the society;
- They result from an interaction process with a specific social group or with the main utility's target public.
- All case studies can be seen as efforts to apply the sustainable development concept.

Conclusions and recommendations

The analysis performed by the WG showed that Utilities approaches to Sustainable Development are highly diversified, among companies and countries. Also the way of reporting progresses toward SD is highly variable, with some lack of evident and transparent data and a poor degree of standardization.

The reports and case study analysed cover the period 2002-2004; the situation is now showing a continuous progress, both in the practices toward SD and in the way to report them.

The key area of improvement in Utilities practices toward S.D. can be summarized as follows:

- greater awareness and reporting of climate change;
- improving resources use and reducing impact of current operations;
- improving environmental performances;
- working in partnership (with stakeholders and/or other businesses) to find solutions to environmental problems;
- implementing programs to sustain biodiversity;
- investing in R&D into new technologies;
- supporting increased access to affordable electricity;
- strengthening relationship with community where the company operates;
- donating time and resources to social causes that resonate with the organization;
- promoting ethical business;
- promoting the well-being of employees.

There is a need of improving and harmonizing the reporting about environmental, social and economical performances.
The main topics are:

- Greenhouse Gases (GHG) emission data: the information should be quantitative and allow a comparison with past periods (of the same company) and other companies;
- Renewable Energy Sources (RES) generation capacity and production data should be given;
- More emphasis should be placed to items like: use of resources, e.g. water use and consumption, use of materials;
- The effects on biodiversity of operations should be dealt with;
- Social and Economic issues should be given higher attention; the main issues should be clearly defined (e.g. Ethical Business);
- Social and Economic appropriate performance indicators should be developed and used; to this scope, existing guidelines could be used[1]);

[1] e.g. the GRI –Global Reporting Initiative- Guidelines; inside CIGRE SC C3, the Working Group C3.02 is developing specific performance indicator for Power Utilities

- The reports should integrate, as far as possible, all he three “pillars” of S.D. (namely Environment, Economics and Society);
- The economic dimension (costs and income) of the performance and actions both in the environmental and social fields should be quantified.

Introduction: Power Utilities and Sustainable Development

In 1987, the World Commission on Environment and Development (the so-called Bruntland Commission) called for the development of new ways to assess the progress toward Sustainable Development (SD).
A very broad definition of SD could be as follows: "*a development that will guarantee to the next generations the same levels of opportunities, welfare, prosperity and availability of resources that we have today*".

For Electric Utilities, Sustainable Development is a very wide concept, that includes Environment, Economy and Society (the three "pillars" of SD), and that affects the entire "value chain" of electric sector, i.e. generation, transmission and distribution, together with the final use of electricity.

Electricity is more than energy: it is a vital component of infrastructures and an essential part of modern day life, playing a major role in the economies of most countries. Electrification has been the major factor in cleaning up cities, improving the efficiency and productivity of industry and business, and improving the efficiency of natural resources consumption. It also provided access to health care and education services. Largely as a result of electrification, energy intensity has been declined steadily on a global scale (-1% per year over the last century), and also carbon intensity has been declining (about –0.3% per year).
While some two billion people around the world still do not have access to electricity, electricity increased its share of energy consumption (during the 20th century) to nearly 40% in the OECD Countries.

Despite this vital role of electricity in the modern world, some very important challenges are to be faced by Electric Utilities in the achievement of Sustainable Development.
Two main areas have been identified, namely:

- to find innovative ways to integrate SD practices into existing operations
- support future energy options that meet the needs of stakeholders as well the reality of the sector.

With respect to <u>improving existing operations</u>, the following are some of the identified challenges:

- looking for innovative ways to supply and increase access to affordable electricity in developing Countries while reducing the sector's overall contribution to greenhouse gas emissions
- investigating how demand side management (DSM) options can assist with affordability of electricity and poverty alleviation as well as addressing climate change
- identifying additional mechanisms to integrate SD thinking into decision-making of electric business
- expanding supply chain management to further environmental and social goals of the business.

With respect to <u>support future energy options</u>, the following are some of the identified challenges:

- exploring the potential of extending life of existing assets
- reducing the sector's contribution to greenhouse gas emissions
- balancing the economies of scale of large centralized plants versus the inherent flexibility of smaller decentralized investments
- resolving the barriers to investments in new technologies with lower impacts
- continuing to invest in R&D into new technologies
- finding ways to make economic DSM investments more widespread
- exploiting new ways to engage stakeholders in discussions on future energy options.

The scope of work for the WG C3-03

The sustainability strategy followed by Electrical Utilities is far from being standardised and a first useful and necessary step is to collect and compare information about their approaches in order to identify trends and best practices and to establish a reference framework.

One of the scope of WG C3_03 is “to prepare a general overview and synopsis of Power Utilities practices toward sustainable development in the generation, transmission and distribution of electrical energy” (quoted from WG-C3-03 Terms of Reference).

Therefore as a first step, it was decided to analyse a number of Sustainability Reports published by Electricity Utilities (or, in the absence of Sustainability Reports, the Corporate Responsibility, Social or Environmental Reports).
This analysis has been followed by the collection of some “case studies”, from the Utilities represented in the WG and/or contacted by SC C3 Members, relevant to the three “pillars” of Sustainable Development, namely Environment, Society and Economy.

Sustainability Reports analysis

Eleven Reports have been provided by WG Members.
It should be noted that there is quite a spread in reporting periods – some of the collected reports date back to 2003 while others refer to the year 2005. It is very likely that some, if not the majority of the participating companies will have improved reporting in the two years since we started the work.
The analysis of the collected documents, is based on four tables (see the WG C3-03 Report 011 "*Analysis of Sustainability Reports prepared by Electrical Utilities*"), derived from the report "Sustainability in the electricity utility sector", prepared by the WBCSD on July 2002.

The geographical coverage of the analysis was largely "eurocentric"; the distribution of the eleven is in fact as follows:

- six from (Western) Europe
- two from North America
- two from Japan
- one from Africa.

In the sample there are four vertically integrated utilities, covering all the sectors of Generation, Transmission, Distribution and Sales of electricity; one utility operates in the transmission sector only, while the remaining six cover some but not all sectors. It could be worthy to note that nine of the eleven utilities operate at least in the generation sector, and that seven operate also in sectors other than electricity (mainly gas and telecommunications).

In the following pages the analysis of the collected reports is shown.

General remarks

Investors, NGOs and regulators are exerting pressure on companies to report on sustainability. International sustainability standards such as ISO14001, the Global Reporting Initiative (GRI) and the Global Compact (United Nations) are increasingly used by companies to do such a reporting.
The interest in sustainability issues by the financial market has continued to increase and has resulted in the launch of sustainability indexes including the FTSE4Good Index, Business in the Environment Index and the Dow Jones Group Sustainability Index.

Eight of the eleven utilities considered have published a Sustainability or a Corporate Responsibility Report. The same number refer, in their reports, to the GRI Guidelines, that constitute now a recognized standard in this field. Eight of the eleven Utilities (but not the same eight as before) also submitted their report for "third party verification", that appears now as a normal practice.

All the Utilities operate, or are implementing, an Environmental Management System (EMS), according to the ISO14001 Standard.
Attention should be paid to the difference between operating EMS and certified EMS according to ISO 14001, because the latter implies a fully compliance with environmental regulations and laws). Moreover, the EMS certification could be incomplete and/or under way, e.g. for integrated Utilities, only some divisions may be certified, and for generation Utilities only certain sites may be certified.

Environmental aspects

Coming now to examine some of the most important environmental aspects, we focus the attention on the following items:

- The trend in the environmental impacts of operations
- The policies for GHG emission reduction
- The contribution of renewable energy sources
- The resources consumption and the efficient use of energy

Reduction of environmental impact of operations

The item is deemed important by almost all Utilities.
In all the reports, emission data are given, while waste production/recycling data are less frequent and data about water discharge are almost absent - it seems possible to infer for the electrical utilities, the priority is given to atmospheric pollution-, followed by waste production/recycling, while water pollution is not seen as a relevant problem.
This is mainly to do the fact that the analysed reports come from utilities operating in the field of Generation. Other impact factor to be considered important, especially for Transmission Companies are: visual impact, EMF, Noise, vegetation management, wildlife protection.

As far as atmospheric pollution is concerned, it is worthy to note that air emission reductions have been achieved both by increasing the natural gas percentage (of the total fossil fuels burned) and/or installing flue gas treatment system. On the other hand, increases in air emissions have been mainly the consequence of a larger use of coal.

As far as wastes are concerned, it should be noted that the greatest attention is devoted to recycling.

Greenhouse gases policy

Climate change is of concern to the majority of Utilities working in the field of Generation, while those operating in the Transmission & Distribution appear to be less involved. This difference derives from the impact that the different sectors can have on reducing GHG – clearly, generators have a higher starting point and can potentially achieve a greater reduction (in absolute value), although not necessary in terms of the percentage of their emissions
Especially for Transmission utilities, items like SF6 losses and Transmission losses (transformed into CO_2 equivalent) should be taken into account; this last item raises the question of what is the emission factor (CO_2 mass emission per kWh) to be used for conversion.

Main options to reach a reduction in GHG emission are:
- nuclear generation
- increase the percentage of renewable generation
- increase the natural gas use, especially through high efficiency combined cycles
- use of “flexibility mechanisms”
- increase the efficiency in energy end use
- reduce methane leakage from gas distribution networks
- provide access to networks for renewable generation

Renewable energy sources (RES)

First of all, it should be noted that the reports are very inhomogeneous and deal with the subject in very different ways. Percentages (present and in the future) of installed capacity and energy generated –that could help greatly the reader- are presented only in some cases.

Coming into quantitative considerations, it’s clear that, for all the Utilities, the only renewable energy source that gives a significant contribution to the total energy generated is the Hydroelectric Power (large plants only), scoring some 10 to 30 %, for the most involved Utilities.

Wind generation is the other option, though with a much smaller production quota but, in many cases, with larger expectations.

Other sources are negligible in terms of contribution to generation, but anyway important from a Research and Development perspective.

Some Companies do not have their own renewable generation. However. they purchase "green power" from other producers, in order to meet targets for the percentage of Renewable Energy Source (RES) imposed by the law and/or regulation in their respective countries.

Resources consumption and energy efficiency

Despite the importance of the resources consumption in any sustainable development scenario, it should be noted that the reports are very inhomogeneous and deal with the subject in very different ways..

The item "Efficiency" should be intended to deal both with efficiency in Utility operations and in the end uses; however, these two aspects are very seldom considered together; moreover, only some reports contain quantitative data.

Many utilities are implementing programmes to enhance end-use efficiency, through:

- consulting services offered to customers
- promotion of heat pumps and other devices
- support for Demand Side Management (DSM).
-

Some Utilities reported gain in efficiency in its own operation (in terms of fuel savings), due to adoption of better performing technologies; other Utilities reported effort in reducing resources consumption in buildings and/or office activities. It is worthy to note that there is a different of order of magnitude among the two items.
A not negligible energy use in Utilities operations is represented by fleet and service vehicles fuel consumption.

Actions dealing with the Society

The actions dealing with the Society to which the Utilities focused their attention are:

- Support to key social programmes
- Stakeholders consultation
- Support ethical business practices
- Promote health, safety and employee welfare

Other items, that appears to be of paramount importance for a really Sustainable Development, but only in some specific countries or context (typically in Developing Countries), such as e.g. "Expand the access to electricity" and "Guarantee power prices at affordable level" have been analysed but are not reported here.

Support to key social programs

For almost all the Utilities, funding of social programmes appears to be an important topic. The information laid down in the reports, however, are greatly inhomogeneous and a classification and quantitative evaluation is very difficult.

Stakeholders consultation

Almost all of the Utilities devote attention and consideration to this item. Among the stakeholders included are investors, Public Authorities, consumers and industrial associations, NGO's and the general public.

The ways the Utilities communicate with stakeholders range from meetings, conferences and "road shows" to newsletters, leaflets, brochures, and use of the Internet.

Support ethical business practices

This item is dealt with in a very different manner by the Utilities. In some cases, "ethical business practices" are referred only to the policy adopted with Company's employees. In other cases, a more general concept of "responsibility" is embedded in the Company's internal management practices, in the relationship with stakeholders, consumers, general public and also in the choice of suppliers.

Promote health, safety and employee welfare

The item of OHS (Occupational Health and Safety) is certainly assumed to be of paramount importance by all the Utilities. In some cases, the "wellness" of employees is assumed explicitly to be of equal importance.

The economy side

On the economy side, we extract information about:

- Support to R&D
- Support to business development
- Policies to improve the supply chain
-

Economic aspects should seem at first sight to be easier to describe in a concrete way, with the support of quantitative data. However, this only appears to be true for "traditional" items, like, "Added value", "Return on Assets and Equity" and so on, that have been analysed but not reported here. For items more directly linked with a sustainability concepts but more difficult to quantify with synthetic indexes, as those described here below, large inhomogeneous descriptions are found.

Support to R&D

The Utilities that reported to invest in technological R&D seem to be those involved in the Generation field, while transmission/distribution companies seem to have a lesser priority.

As a general comment, it could be inferred that the inhomogeneous nature of reporting in this area may suggest that some companies still consider R&D to be a technical / engineering issue and have not fully linked it to CR and/or sustainability.

Support to business development

The inhomogeneous nature of reporting in this area may suggest that while companies see corporate responsibility as part of ongoing business operations , it has not yet been recognised fully as offering a competitive advantage in business development activities. This may be due to there still being a view that there is a cost to CR.

An interesting exception to this is the experience reported by one Utility, of the creation of new enterprises, dealing with innovative business segments related to environment and energy use (the so-called "eco-business).

Policies to improve the supply chain

Some Utilities already cover this issue, while others seem either to be starting to address this issue or not discuss it in their report. It could be inferred that this is an important topic, but that only some "advanced" Utilities already recognised it. Another hypothesis is that sometimes the Reports may not be comprehensive.

It should be noted that Utilities are dedicated growing importance to this item, which is treated now in more reports compared with the situation analysed and reported here. The Power Sector is far behind other industrial sectors, but it's gaining terrain.

"Case Study" analysis

Introduction and general remarks

The scope of WG C3_03 include as one of its tasks "to prepare a general overview and synopsis of Power Utilities practices toward a sustainable development, both in the generation, transmission and distribution of electrical energy" (quoted from WG_C3_03 ToR).

Therefore it was decided to analyse a number of Sustainability Reports published by the Utilities (or, lacking the Sustainability Reports, the Corporate Responsibility, Social or Environmental Reports).

Additional to this analysis focused on the specific content of the Sustainability Reports, WG C303 conducted a survey of complementary information denominated here as "case studies".[2] This additional task was developed in order to obtain information about sustainable experiences and programs developed and implemented by the companies.

The WG members considered this additional information as important, as the Sustainability Reports normally present a balance of corporative actions, indicators and results in a general way. Additionally, in almost all reports, the focus of the report and methodologies of analysis used doesn't allow the visualization of specific voluntary actions conducted by the companies to collaborate with society towards the sustainable development.

The first step developed was requesting, to a list of power companies, descriptions of sustainable experiences to illustrate the Sustainability Reports with sustainable experiences of the utilities. This request was made by e-mail (WG Coordination).

It was explained that the idea was to present descriptions providing examples of sustainability situations/actions as they occurs in the day-to-day operations of the companies. The goal of this survey is to complement the WG Report with relevant experiences on sustainable experiences.

The descriptions could relate:

- corporative actions
- specific projects on transmission, generation and distribution activities
- the elaborating process of the Sustainable Report (methodology, participation process, etc.)
- social responsibility actions

The actions should be chosen by the utility taking into account the sustainable strategies and the environmental policies of the project or the company. The description should cover the experience in different phases: planning; implementation; maintenance. The role played by the company and other actors involved, should be highlighted and the results described showing their significance either to the company, the society or to the environment or ecosystem.

The WG C3-03 received 15 descriptions and each "case study" is presented used the **STAR** methodology that consists in the description of:

- **S**ituation
- **T**arget to be achieved
- **A**ctivity performed and/or envisaged
- **R**esults obtained and/or expected

[2] Understood not as a detailed analysis of a case but as a description of an experience on sustainable development - process, action or program - presenting examples of practices adopted by the utilities. These experiences, as a specific dimension of the sustainable development, can become ideas for other utilities as well as "something that can be learnt".

The experiences presented here were not selected to compose this report. All the cases received were organized by country (7 different countries) and by sub themes, relevant to the three "pillars" of Sustainable Development, as *environment*, *society* and *economy*. It was considered that the diversity of examples can contribute to shown the adaptation of a specific reality.

It is interesting to emphasize some general characteristics of the experiences reported in the "case studies":

- They are voluntary actions developed by utilities;
- They are not intended to satisfy legal requirements nor to ensure compliances with certification processes;
- They are adapted to the context where the utility operates, to the situation of the country and the characteristics of the society;
- They result from an interaction process with a specific social group or with the main utility's target public.

All case studies can be seen as efforts to apply the sustainable development concept.
The following Table provides a brief synopsis.

Country	EN = Environment SO = Society EC = Economy	Argument
Australia	EN, SO	Experience in the implementation of an Environmental Management System for a TSO.
Australia	SO	Environmental programs developed by the regional TSO in partnership with local communities.
Brazil	EN, SO	Developing a program focused on the quality and quantity of water and on the people's quality of life.
Brazil	EN, SO	Developing programs focused on quality of water , recovery of the local flora and life values, improving the social welfare of local communities.
Canada	EC	Contributing to the development of Québec economy
France	SO	Restoration of ancient villages
Japan	EC	Examples of "Eco-business"
South Africa	SO, EC, EN	Reduction in water consumption, to support the improved management of scarce water resources
South Africa	EN, EC	Energy efficiency: expansion of supply options, return to services programme of power stations, Demand Side Management
South Africa	EC, SO	Electrification of 1.750.000 homes between 1994 and the year 2000.
South Africa	SO	Experience in sustainability reporting
UK	SO	Young offender training programme, aimed to give them work opportunities
UK	EN	Meter refurbishment and recycling.
UK	SO	Funding to tackle the issues of fuel poverty and household energy efficiency
USA	EN / SO	Materials and equipment recovery (also employing mentally and physically disabled local people)

Case study brief description

In the following pages, some more information are given for each case study.

Australia

Strategic Environmental Management

Through Powerlink's Environmental Management System (EMS) potential environmental impacts are identified and appropriate control measures are implemented to mitigate such impacts. Progress against performance targets are assessed quarterly and reset on an annual basis.

A planned schedule of environmental audits is carried out, including monthly reporting on all major construction projects and annual audits of maintenance service provider activities. As a result of auditing programs, Powerlink has implemented various strategies that have resulted in improved environmental outcomes on the ground. This includes increasing the information recorded on the treatment of declared and protected areas, identifying improvements in erosion and sediment control, improving the maintenance of access tracks and more effective consultation on vegetation management for easement maintenance. Other innovative environmental controls have also been completed through monitoring greenhouse issues, weed control initiatives, vegetation and fire management and protecting wildlife.

Australia

Environmental goodwill

In many regions, Powerlink works together with communities to establish innovative goodwill partnerships and programs that improve the environment surrounding Powerlink infrastructure and create employment opportunities for local residents.

Greening Lockyer, a three year partnership program funded by a $1 million community grant from Powerlink, aims to enhance the environment properties of the Lockyer Valley, in South East Queensland, minimise the impact of transmission infrastructure and create training and employment opportunities for local residents. Since its launch in 2003, more than 2, 600 community members have been involved in the project, planting more than 39, 000 trees at wetland, riparian and other sites to improve and restore habitat.

With Townsville City Council and Thuringowa City Council, Powerlink launched the Community Environment Fund (CEF) in 2004, a three year program that provides funding and support for projects that enhance the environmental properties of the region and minimise the visual impact of Powerlink's electricity transmission infrastructure. The first round of CEF projects has seen more than 425 local volunteers contributing to plant more than 2,700 trees, shrubs and groundcover. In addition, 5.3 hectares of ecosystems have been restored and approximately nine hectares of weeds have been cleared.

Other projects are: the "Wet Tropics Wildlife Corridor Project", established in 2000 with a five year funding commitment from Powerlink, aimed to protect the biodiversity of the Walter Hill ranges area between Townsville and Cairns in North Queensland, and the "Greening the Gaps", launched in partnership with Brisbane City Council (BCC), which funds revegetation works on Powerlink's easements in target areas within Brisbane.

Brazil

Itaipu: energy with social environmental responsibility.

The targets of the "Cultivating Good Water" Program have been established according to Region's Agenda 21 and Itaipu Binational mission and strategic objectives:

- To preserve, conserve and recuperate the regional environment, on an integrated way between municipality and partners making secure the management of the hydrographic basin.
- To contribute to the improvement of regional population quality, fortifying the public politics, with human development being index's references – IDH – and Aims of the Millennium.
- To use all the touristic and technological potential of Itaipu and region, with perspective of generation of income and opportunities for the community, getting a Polo radiator of knowledge and integration in South America

Concrete planning actions have been launched, aimed to the modification of the local -rural and urban- producer enterprises ways of production; in particular attention has been given to:

- soil and water – with diffusion of: soil conservation practices (to fight and prevent soil erosion), direct plantation techniques, restoration of riparian vegetation ("*mata ciliar*"), correct treatment and re-use of organic wastes and packaging.
- fauna and flora biodiversity - with the recuperation and preservation of the ciliary's forests and legal reserves, implantation of the biodiversity corridor and the fishes migration channel.
- economically critics segments - with implantation of socials and environmental projects like: fishery productivity improvement, organic alternative and family agriculture, beekeeping, medicinal plants, garbage collection and re-use, indigenous community development and young gardeners program.

Brazil

Tribute to Iguaçu Programme

This Programme has the goals of achieving a better quality of river water , an increase in the average rate of the human development of the communities, the recovery of the local flora and life values, the integration of those communities in the social and environmental activities, and the valuing of the cultural diversity and local tradition.

The Programme will also give its contribution to education through motivation to the setting up of partnerships and the taking of actions at the universities and schools of the communities with the purpose of adopting a local curriculum based on a pedagogic method in which the children are the responsible agents of their learning process. As a social contribution, the Programme will aim for the appointment and mobilization of leaders within the communities as well as for the support to local projects in order to inspire the self-esteem of the population and hence actions for the continuous and sustainable improvement of their economic condition through sustainable local productive arrangements (SLPA) and life in the communities and in their surroundings.

The program began with a pilot community of about 4,000 inhabitants (Porto Vitória), and soon extended its reach to an indigenous community (Karuguá, in Piraquara), also as pilot experience. Today, it has already expanded its actions to União da Vitória and Porto União communities, adding about to 80,000 inhabitants. We intend to embrace the 109 municipalities of the river Iguaçu basin within a period of 10 years.

Canada

Playing a major role in the Québec economy:

Hydro-Québec -a government-owned corporation- is one of the largest electricity companies and a major producer of green power in North America. Hydro-Québec has consistently generated income, a part of which has been reinvested to ensure reliability and quality of service, while another was paid to its shareholder to benefit Québec as a whole.

The main contributions from Hydro-Québec activities to the economy of Québec are:

- contributing to Québec's economic growth
- promoting regional development

In 2004, Hydro-Québec procurement of goods and services totalled $2,394 million: nearly 94% of goods and services came from suppliers within Quebec.

Again in 2004, construction projects activities generated nearly 46,000 direct or indirect jobs. As an example, in 2004, Hydro-Quebec, Société d'énergie de la Baie James and the Grand Council of the Crees signed an agreement that provides for the creation of partnerships, recruitment of Cree workers and awarding of contracts to Cree businesses. More than 500 Crees worked on the Eastmain-1 construction site in 2004.

France

Restoration of ancient villages

The goal is to restorate the oldest part the village of Vénéjan, boosting local tourism and social integration.
This restoration work is carried out as part of a community work scheme, intended to help reintegrate certain disadvantaged groups into society, thereby creating a number of jobs. The positive impact is very clear for the village: the sites are now safe again and the natural and architectural heritage has been restored, that is so important to Vénéjan's identity. Since
then, visitor numbers have increased significantly and the village has adopted a new, dynamic approach. Meanwhile, the social aspect of the operation has enabled people in difficulty to get back to work.

Japan

Examples of "Eco-business"

Kansai has been investing its Group-wide resources into new business area socalled "Eco-business":

- Kanden-el farm Inc. (regenerative processes for agriculture)
- Moss Works Kanden Co. Ltd. (rooftop revegetation material)
- Kanden GEO-RE Co. Ltd. (pollution soil measures)

Kanden-el farm Inc. combines regenerative process technologies and the traditional agricultural skills of the regions that contain hydropower sources with bioregion techniques, to create a regenerative process for dam driftwood, forest thinning scraps and other materials and realize a resource cycle and regional symbiosis.
Moss Works Kanden Co. Ltd. focuses on selling moss as a rooftop revegetation material, that not only contributes to alleviating the heat island phenomenon, but also provides the Rooftop greenery comforting effects of plant-life to soothe the spirits of urban dwellers.
Kanden GEO-RE Co. Ltd. (pollution soil measures) provides customers with optimal solutions through consulting and purification projects. By employing a continuous processing system that combines the previously separate techniques of cleaning and heat processing, Kanden GEO-RE is able to purify polluted soil at lower costs and with greater effectiveness.

South Africa

Reduction in water consumption

Eskom is a large consumer of freshwater in South Africa, accounting for approximately 1.5% of the country's total water consumption annually. It is expected that Eskom's water consumption will increase over the next 10 years, due to increased demand for electricity. However, decades ago Eskom recognised that the organisation would have to find ways of limiting increases in water consumption and contribute to sustainable water use in South Africa.
Water use targets in terms of litres of water used per unit of electricity sent out are set for each power station every year. The water targets are linked to the Eskom Sustainability Index contained in performance compacts, which are in turn linked to business unit and individual performance bonuses. The targets are benchmarked against historical as well as theoretical water consumption for each particular type of plant.
Eskom has over the last two decades introduced a number of innovative technologies to save water. These include dry cooling, desalination of polluted mine water for use at the power stations, and technical improvements on treatment regimes to maximize the beneficial use of water. In so doing, more than two hundred million litres of water are saved every day.

South Africa

Energy Efficiency

ESKOM'S DSM (Demand Side Management) strategy comprises a dual approach: to reduce electricity demand at peak periods (07:00-10:00 and 18:00-20:00) by shifting load to off-peak periods and by overall electricity consumption reduction (24-hour reduction) by installing energy efficient equipment and optimising industrial processes. Sustainable DSM projects often involve a combination of both methods, with the following energy efficiency targets:

- a final energy demand reduction of 12% by 2015
- a long term saving of 4 255 MW over a period of 20 years.

DSM actions are focused around three programmes: Residential, commercial and industrial programmes, Public education and Schools programme.
The future of DSM remains focused on commerce and industry, which collectively consume 77% of South Africa's energy. However various initiatives will also be put in place to reduce the residential consumption that reaches more that 30% during peak periods.

South Africa

Electrification

For any nation or region to move forward and become competitive in the global market, providing reliable and affordable electricity is crucial
ESKOM committed itself to connect 1 750 000 homes between 1994 and the year 2000.
The effective implementation of the electrification programme was made possible by the commitment and participation of a number of bodies, including government, business, academic institutions and NGOs. Some of the problems encountered included cost per connection, lack of community interaction and non-payment.
A committed electrification programme has resulted in the electrification of 3.2 million homes being electrified since the beginning of the electrification programme in 1991 up until the end of March 2005 at a cost of approximately R9.4 billion. The funding and planning for electrification has been the responsibility of National Government.

South Africa

Sustainability reporting

Eskom's annual reporting process, from 2001 onwards, was revised to incorporate and report on sustainability or "triple bottom line" issues, adhering as far as possible and practical to the Global Reporting Initiative Guidelines and the King 2 recommendations on non-financial reporting. The goal was to move towards an integrated approach towards sustainability reporting; covering aspects of economic, environmental and social issues.
Due to the needs of different stakeholders, which put pressure on the quality and quantity information reported, a more detailed version of the sustainability related information contained in the Annual Report, is published on the internet.
As in the case for previous Eskom annual reports, an external auditing firm is responsible for auditing and expressing an opinion with regard to performance reporting in the Directors' Report. This is not limited to financial performance data, but also to the non-financial performance data i.e. economic, environmental and social performance data. This audit opinion includes the additional sustainability information in the internet version

UK

Meter refurbishment and recycling

National Grid's metering businesses provides installation, maintenance and meter reading for both electricity and gas suppliers in the UK.
Meters are typically removed or replaced for a number of reasons: age; gas/electricity supplier replacement policies or industry standards; and supplier / end user needs. In a recent typical year, our metering business oversaw the removal and replacement of over 800,000 meters.
Not all meters are suitable for refurbishment, meaning that there is a need to responsibly dispose of the remainder.
During the typical year, approximately 125,000 meters were refurbished, the remainder were recycled avoiding both:

- the extraction/production of approximately 1,650 tonnes of raw materials many of which are produced by energy intensive processes and
- the disposal of approximately 1,650 tonnes of material to landfill.

The recycling process used enables ferrous and non-ferrous materials to be separated such that around 65% of the meter (by weight) can be recovered.

UK

Young offender programme

The UK has a growing population of young offenders in prison - there are currently over 11,000 - with very little opportunity for rehabilitation and re-introduction into society. The national average re-offending rate at this time is over 70%. It costs approximately £36,000 (€56,000 / $63,000) to keep a young person in prison for one year.

At the same time, there is a growing skills shortage in many of the UK's industry sectors; for National Grid, skilled gas network operatives both for its own workforce and that of its main contractors.

Training offenders for the gas industry is at the heart of this inspiring scheme. As well as providing motivated, skilled gas network operatives, the programme is delivering shareholder value and increasing the positive perceptions of many stakeholders.

From 2006, it is envisaged that 1,300 offenders will be trained and employed by five UK industrial sectors.

UK

Affordable warmth

Fuel poverty is one of Britain's biggest social ills. Often caused by poor insulation and old or inefficient heating, fuel poverty affects more than 3 million families in the UK.

National Grid's Affordable Warmth Programme sees the Group working with the UK Government, key agencies and social housing providers (local authorities and housing associations) to improve the level of comfort in UK homes in both the social housing sector and the private sector, through facilitating the installation of energy efficiency measures, efficient gas central heating systems, and energy and benefits advice.

Affordable Warmth works on a number of important fronts by:

- Providing a financial solution, to underpin the installation of heating equipment in social housing;
- Delivering partnership solutions – a community based approach to eradicating fuel poverty ;
- Supporting the evaluation of the social and environmental benefits associated with community renewables;
- Helping develop local training courses in energy efficiency and gas industry skills in order to sustain the programme;
- Developing a 'whole community, whole house' solution that includes extending the gas network to fuel poor communities.

In the UK, through the Affordable Warmth Programme, nearly 372,000 homes have had energy efficiency measures installed and nearly 4,900 people have been trained in energy related skills since 1999 (as at end January 2006)

UK

Investment recovery in USA

Like any utility, National Grid's asset replacement and maintenance activities result in a large volume of waste. Not only does this and other company-generated waste represent an environmental impact through its disposal, it also represents potential economic value.

Located in Syracuse, New York, National Grid's Investment Recovery and Recycling Services facility is the clearinghouse and marketplace for the sale, disposal, and redeployment of surplus company assets.

The facility handles three primary categories of materials:

- Scraps/recyclables – Non-ferrous metals, ferrous metals, processed metals, processed wire and cable, wood products, cardboard, paper, plastics, and porcelain
- Office equipment – Computers, furniture, excess supplies, toner cartridges, telecommunications equipment and lighting
- Electrical equipment (for sale, decommissioning or reuse) – Generator parts, refurbished hardware, distribution equipment, substation equipment, transmission equipment, transformers, cable and conduit hardware, meters, switches, and relays.

In fiscal year 2005, the Centre recycled a total of 12,262 tons of materials and realised savings to National Grid's US operations and income from sold materials represented approximately $4.1 million.

Conclusions and recommendations

The analysis performed by the WG showed that Utilities approaches to Sustainable Development are highly diversified, among companies and countries. Also the way of reporting progresses toward SD is highly variable, with some lack of evident and transparent data and a poor degree of standardization.

The reports and case study analysed cover the period 2002-2004; the situation is now showing a continuous progress, both in the practices toward SD and in the way to report them.

The key area of improvement in Utilities practices toward S.D. can be summarized as follows:

- greater awareness and reporting of climate change;
- improving resources use and reducing impact of current operations;
- improving environmental performances;
- working in partnership (with stakeholders and/or other businesses) to find solutions to environmental problems;
- implementing programs to sustain biodiversity;
- investing in R&D into new technologies;
- supporting increased access to affordable electricity;
- strengthening relationship with community where the company operates;
- donating time and resources to social causes that resonate with the organization;
- promoting ethical business;
- promoting the well-being of employees.

There is a need of improving and harmonizing the reporting about environmental, social and economical performances.
The main topics are:

- Greenhouse Gases (GHG) emission data: the information should be quantitative and allow a comparison with past periods (of the same company) and other companies;
- Renewable Energy Sources (RES) generation capacity and production data should be given;
- More emphasis should be placed to items like: use of resources, e.g. water use and consumption, use of materials;
- The effects on biodiversity of operations should be dealt with;
- Social and Economic issues should be given higher attention; the main issues should be clearly defined (e.g. Ethical Business);
- Social and Economic appropriate performance indicators should be developed and used; to this scope, existing guidelines could be used[3]);
- The reports should integrate, as far as possible, all he three “pillars” of S.D. (namely Environment, Economics and Society);
- The economic dimension (costs and income) of the performance and actions both in the environmental and social fields should be quantified.

[3] e.g. the GRI –Global Reporting Initiative- Guidelines; inside CIGRE SC C3, the Working Group C3.02 is developing specific performance indicator for Power Utilities

Technical reports produced

The main technical reports prepared by the WG are listed here below:

[1] *Electric Utilities facing Sustainable Development. A synopsis of the report "Sustainability in the electricity utility sector", prepared by WBCSD, July 2002"*; WG_C3_005, November 2004

[2] *Guidelines for the analysis of Sustainability Reports prepared by Electrical Utilities*; WG_C3_006, March 2005

[3] *Sustainable Experiences: Best Practices and Lessons to Learn. A Framework for Case Studies on Sustainable experiences*; WG_C3_008, October 2004

[4] *Analysis of Sustainability Reports prepared by Electrical Utilities*; WG_C3_011, September 2005

[5] *Case Study analysis report*; WG_C3_015 rev 1, October 2006