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Global Forum in Rio de Janeiro, Brazil, June 1992.

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Sustainable Energy News

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Where can we make a difference?
Editorial by Rene Karottki INFORSE Secretary

INFORSE is increasingly focusing on how to make a difference as a global network, i.e. what the network can achieve that would be difficult or impossible to reach for the individual member organisation.

Since its founding in 1992, INFORSE has produced mainly newsletters, website materials,

In the coming years, INFORSE action at the global level will focus on:
International policy development, mainly the process leading up to the 9th meeting of the UN Commission on Sustainable Development (CSD 9) in 2001, and including links to the Desertification Convention and the Climate Convention.
Global information, education and awareness activities, including active use of internet and mass media.
Developing south - south - north co-operation, demonstrating innovative, alternative models for sustainable energy development.

Thus, INFORSE comes out of its 5th birthday as more action-oriented. While the basic role as a network for communication and exchange of experience is maintained, INFORSE will be increasingly visible in global policy development and in demonstrating innovative models for cooperation.

There is still a lot of work to do in creating equitable, participatory, and environmentally sustainable energy development, both nationally and internationally. INFORSE and the individual member organisations are already in a position to make the necessary difference. This position will be increasingly used in the coming years.

New INFORSE Action Plan

At the INFORSE Coordinators' Meeting in Dakar, Senegal, January 26-30, an overall Action Plan for the coming three years was elaborated. It makes a clear distinction between activities geared towards international policy and those addressing goals of increased cooperation among INFORSE members, particularly South - South cooperation.
Influence the Global Agenda for Sustainable Energy

Sustainable Energy in the Rio Process

A major focus for INFORSE activities will be the preparations for the UN Commission for Sustainable

convention on desertification. These negotiations have clear links to sustainable energy, and INFORSE should be involved in support of the members involved. For the Desertification Convention, the activities will focus on the Conference of the Parties (countries) in Dakar in November, 1998. In general, INFORSE members are asked to inform the Network about their participation in the negotiations, to facilitate joint INFORSE activities "on the spot".

Information and Awareness Activities

The basic news channels of the Network, i.e. this newsletter and the INFORSE website will be improved, and new channels of communication will be added. Plans include an email list and, if funds can be made available, a French edition of Sustainable Energy News with special focus on West African problems. A new task force will assist the secretariat giving special attention to the internet activities. The regional coordinators will only meet in person every second year, and will meet virtually via email conferences on alternate years.

South - South - North Cooperation

The other major INFORSE activity will be to foster increased South - South - North cooperation among its members. The focus will be on using experience gained in one Southern country to support the development in other countries/ regions, and to supplement with experience from the North. It is the intention to develop projects that demonstrate alternative models for sustainable energy development. A small South - South - North Cooperation Fund will be formed to support and facilitate such cooperation, primarily preparation of specific cooperative projects.

Current ideas are:

- Exchange of biogas experience, starting with an international biogas conference in India in late '98 or early '99, followed by bilateral cooperation projects.
- Cooperation on small hydro-power, e.g, with members in India and Nepal.
- Renewable-energy island projects, starting with the ongoing mapping of initiatives done by Forum for Energy & Development, Denmark.

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Targeting International Policy

The 8 INFORSE members represented at the Climate Negotiations in Kyoto took the opportunity to make an INFORSE statement and to hold a press meeting at December 8, '97. They pointed at the large potential to combine CO2 emission reductions with creations of new jobs. They also urged industrialised countries' leaders to accept significant reductions in CO2 emissions in the climate negotiations and to take the lead in sustainable energy development by implementing efficient and renewable energy technologies on a large scale.

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EU Funds for Development

In a recent paper, INFORSE-Europe published an overview of EU development assistance that can be used for sustainable-energy projects. The paper, "EU Activities for Sustainable Energy in Development," gives a short overview of the 4-5 bill. ECU that the EU spends annually on development assistance, mainly as grants. Although the current fraction of these grants that is used for sustainable energy is small, the potential exists for a large increase in this amount. Large funds are available for NGO projects, where the NGOs find matching funds within the EU countries.

The paper is available from the INFORSE home page.

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Financing Theme

The importance of international financing for the development of the energy systems of developing countries and of Central and Eastern Europe is indisputable. The decision of which energy investments to make is often a question of which funds are available. Even where sustainable energy solutions are the most cost-effective way of providing basic energy services, they are only chosen if they have equal funding opportunities. And this is too often not the

assistance, policy dialogues, seminars, and loan conditionality. In the midst of this, there are examples of market-based initiatives to promote sustainable energy.

The World Bank's private-sector lending arm, the International Financial Corporation (IFC), for example, has launched a Photovoltaic Market Transformation Initiative (PVMTI), which will award \$30 million competitively, through the Global Environmental Facility (GEF), to companies promoting solar PV. The IFC has also created a commercial debt and equity fund, capitalized at between \$150 to \$240 million, called the Renewable Energy and Energy Efficiency Fund (REEF) to promote small renewable and energy efficiency projects. Further, the World Bank, the IFC, US-based private foundations, and others are proposing a Solar Development Corporation (SDC) to provide business development services to local solar entrepreneurs. The SDC would also provide credit to solar businesses and to purchasers of solar home systems.

Liberalization Favours Fossil Fuels

Despite promising initiatives such as those mentioned above, however, deregulation is tending to promote oil, coal, and gas (fossil fuels) in the short term. Meanwhile, the extension of modern energy services into rural areas, along with initiatives in renewable energy, energy efficiency, and biomass, are being placed at a disadvantage. This is partly because their capital costs for new and renewable technologies tend to be higher, and partly because the price of fossil fuels doesn't include external social and environmental costs.

A central issue is the way in which reforms take place and are regulated. In this context, public energy policy seems to be key. The central theme of all the development banks' energy activities is liberalization. So, market regulation is becoming increasingly important in ensuring wider access to energy services and in promoting efficient use of renewable-energy sources. This is problematic in many of the countries in which the development banks operate, however, because of their lack of

August, 1998 into non-binding "Good Practice" documents. So, there are now no mandatory performance indicators against which to judge the sustainability of the Bank's energy investments.

Unsustainable Operations

Most recently, a June-'97 study by the Washington, DC based Institute for Policy Studies, 'The World Bank and the G7: Changing the Earth's Climate for Business', has claimed that the World Bank is still massively supporting unsustainable energy development. (see p. 8)

Regional Banks: Much the Same

The situation in the regional development banks is mixed but shows the same general picture: an interest in sustainable energy is stated by the banks, various promising sustainable energy initiatives exist, but there is a lack of progress in mainstreaming these initiatives. -The European Bank for Reconstruction and Development - faced with energy intensity that is 1.5 - 6.4 times higher than that of EU countries, and with electricity use per unit of economic output typically twice as high as that in OECD countries - created an Energy Efficiency Unit in 1995. Its impact has been limited, however, and, meanwhile, the EBRD is promoting further development of nuclear energy in Bulgaria, Lithuania, Russia, and Ukraine through its Nuclear Safety Account.

-The Inter-American Development Bank, for the most part, is promoting regional energy integration based on fossil fuels, especially natural gas, and has recently downgraded its energy policies.

-The African Development Bank made an effort to produce an energy policy in 1993, drafts of which contained important language on the creation of capacity for African countries to implement an integrated least-cost energy-planning approach. It has yet to finalize the process, and its energy lending is not based on sustainability criteria.

-The Asian Development Bank has shown increased attention to already commercialized renewable-energy sources, such as wind and small hydro, and has begun to take up demand-side management.

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World Bank Support for Sustainable Energy in Sri Lanka
An overview of how a World Bank loan supports solar, wind, and small hydro projects in rural Sri Lanka, and what difference it makes for the rural population.

By Gunnar Boye Olesen, INFORSE

One of the outcomes of the World Bank initiatives for renewable energy is a \$24 mill. loan for the 'Sri Lanka Energy Services Delivery (ESD) Credit Program'. This loan, combined with a \$5.9 mill. grant from the Global Environmental Facility (GEF), shows what the World Bank and similar large financial institutions can do if they decide to lend money for renewable electrification in rural areas of developing countries. The loan is for investments in grid-connected renewables (wind and mini-hydro), off-grid renewables (village hydro and solar home systems (SHSs)), and energy-efficiency measures in buildings. The expected outcome is 26 MW of installed renewable-energy capacity, with the off-grid component supplying electricity to as many as 32,000 rural customers (households and small businesses) that do not have access to electricity today.

Cheap Loan to the Government
The Government of Sri Lanka is a major player in the program. It is the Government that receives the low-interest loan and grant, guarantees the repayment of the loan, and lends it to banks which, in turn, disburse it to the borrowers. The loan to the Government of Sri Lanka is from the World Bank IDA (International Development Agency) facility and is, in principle, an interest-free loan given in a mix of "hard" currencies. The loan runs for 40 years and requires no repayment for the first 10 years. The loan is not entirely interest-free, as the Government of Sri Lanka pays a "service charge" of 0.75% per year on the loan that it has received and a "commitment charge" of up to 0,5% per year on the unused part of the loan.

hard currency, while the projects themselves should decrease the need for energy imports.

Government Funds Added

The Government of Sri Lanka contributes \$1.9 mill. of its own funds to the program. The Government is also involved in administration of the program, e.g., in approving the participation of each of the banks involved.

Commercial Banks as Intermediaries

The Banks in the program pay interest to the Government at a rate equal to the average interest rate

that banks in Sri Lanka pay to their customers on interest-bearing accounts. This rate is typically

12.5% per year, but it is revised every 6 months. The banks borrow the money for a maximum of 15

years with up to 5 years before repayment starts. The banks lend the funds to project organisers at a

rate of interest 5-10% higher than that which they pay to borrow them, for a maximum of 10 years.

The banks will also use part of their own lending capacity for the program, estimated at \$13.7 mill., or 25% of the program budget.

Companies and NGOs

The organisers of actual projects can be private enterprises, NGOs, and/or community cooperatives. To

participate, they must show that they can carry out the project and are credit-worthy in the eyes of the

relevant bank. The project organiser may apply the funds directly to the project, e.g., a village hydro

scheme; or, it may lend them in turn to end-users for, e.g., solar home systems.

Since the interest rate on the loan is 5-6% higher than that which the banks pay, a project organiser has

to pay interest at a rate of about 18% per year. Given a payback time of 10 years, the annual payment

is about 22% of the original loan*. Loans under this program can make investments cost-effective if

they have simple payback periods of about 4 years. These are quite hard conditions compared with

expected loan payback times for renewable energy in, e.g., Western Europe. Even so, they are better

GEF payment \$100
Loan \$300

Annual payment on the loan \$75
(25% of original loan)**
Monthly payment on loan: \$6.25**

Project Development Support

The program also includes grants for technical assistance to develop projects and raise awareness.

These are part of the GEF grant and cover, in full or in part,

- preparation of feasibility studies, business plans, and loan documentation for off-grid projects;
- a national promotion and information campaign on off-grid projects;
- a system to verify that solar home systems and village hydro systems meet agreed specifications;
- a Consumer Protection Facility.

Not Just Money

Besides receiving and disbursing the funds, the Government of Sri Lanka has made an agreement with

the national utility, the Ceylon Electricity Board (CEB), to support sustainable energy in a number of ways:

- The CEB has initiated a standard tariff and standard contracts for the purchase of power from small producers for the grid, based on long-term avoided costs, to be updated annually.
- The CEB will include renewable-energy supplies in its generation planning, replacing some of the power that it would otherwise obtain from fossil fuels.
- Sri Lanka has adopted a Code of Practice (standards) for energy-efficient commercial buildings.

Technologies Included and Excluded

The renewable-energy technologies included in the program are windturbines (a 3-MW windfarm

organised by the CEB); small hydro-power (below 5 MW, grid-connected and for local village grids); and PV systems, mainly as solar home systems. These technologies are all well proven and are used

commercially in developing as well as in industrialized countries. With the possible exception of some

plants add relatively little to imports, and thus they would have little impact on the Sri Lanka trade balance. This also makes them

less interesting to the companies from industrialised countries that provide the other technologies.

Conclusion

This program looks like one of the best examples on how to overcome the constraints of World Bank

lending (large-scale, intergovernmental operations) to reach dispersed, off-grid rural power projects,

which often is the most cost-effective way to provide electric services to a dispersed rural population.

* Assumes an annuity loan, i.e., interest plus payback is constant

** Assumes that the project organiser does not charge interest on top of bank rates. 10 year loan, annuity.

Source: ASTAE - Unit, The World Bank, 1818 H Street, N.W. Washington DC 20433, USA. E-mail:

rcastro3@worldbank.org, att. Loretta Schaeffer, Ricardo Castro.

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ESCO Concept Finds Its Way in Eastern Europe

EBRD loan for Polish-Danish ESCO to promote energy efficiency in Central Europe

One of the current concepts used to finance energy efficiency is that of Energy Service Companies

(ESCOs), which make energy-efficiency investments and are paid using part of the resulting savings.

This concept is promoted by EBRD as way forward for Central and Eastern Europe. At the end of

1997, one of the first ESCO loans was given to "ESCO International", a company incorporated in

Poland but owned 100% by Danish investors. The company will implement combined heat and power

plants (CHP) and energy savings in Poland as well as in other Central European Countries. To do this,

it is supported by a loan of \$15.6 million from the European Bank for Reconstruction and

Development (EBRD) and \$2.6 mill. from the Danish Investment Fund for Central and Eastern

Europe.

Companies.

Peter Rasmussen, Managing Director of ESCO International, commented, "We welcome the challenge

of being among the pioneers in implementing the ESCO concept. This operation has exceptional opportunities."

But, in spite of the large opportunities, it is still too early to judge whether ESCO International and similar companies can realize a large part of the energy-efficiency potential of Central Europe, attracting the necessary private and multilateral finances.

Sources:

- CEE Bankwatch Network, Yury Urbansky, e-mail: urbik@gluk.apc.org,
 - Energi og Planlægning (Energy & Planning) Netnews, Denmark, June, '97.
 - ESCO International, att. Collin Boyles, e-mail: cpb@esco.dk.
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WB Solar Initiatives

In 1992, the World Bank (WB) launched an Asia Alternative Energy Unit (ASTAE). Then, in 1994

the WB launched a general Solar Initiative. This has helped a number of such projects, e.g.,

two programs received a total of \$150 mill. in Indonesia for solar home systems & mini hydro;

Sri Lankan Energy Services Delivery (see page no. 6-7) ;

nine demand-side management / energy-efficiency programs;

13 renewable-energy and seven energy efficiency programs under preparation for 1998-99;

This shows that it is possible to use large international loans for small-scale local energy solutions.

Still, there is a long way to go before WB energy-sector lending gives an equal share to people living

outside the reach of electric grids.

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IDB's First Loan for Energy Efficiency

The \$ 10 million loan encourages energy efficiency but not renewables in Columbia.

IDB, the Inter-American Development Bank, recently approved its first loan with the specific aim of

promoting energy efficiency. The \$10 million loan to Columbia will enable the Ministry of Mines and

as replacement.

More information:

IDB, 1300 New York Avenue, N. W., Washington, D.C. 20577, USA. Ph: +1-202-623-1753, fax: +1-202-623-1753, e-mail : idb-books@iadb.org, <http://www.iadb.org/>.

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Private Funds' Initiatives

Multilateral Development Banks are not the only international sources of funding for renewable energy.

A number of initiatives have been started to make private capital available for sustainable energy for developing countries.

Solar Electric Light Fund (SELF)

This US-based fund has provided grants and loans for solar home systems in 10 developing countries

since its start in 1990. In Sri Lanka, it is working with the Sarvodaya Shramadan Movement. Since

1992, this collaboration has resulted in the installation of more than 500 systems. They were financed

by revolving funds with seed money from SELF. In Bangor, India SELF has formed a Solar Electric Light Company.

Solar Century Initiative

This initiative, officially launched in June, 1997, aims to attract private capital to invest in renewable

energy in industrialised and developing countries. It will work as a broker between solar investment

proposals and investors, partly via organisation of Oxford Solar Investment Summits. Part of its

brokerage fee will go to a Solar Century Global Community Fund, a revolving fund for investment

assistance for those most in need, especially in the developing world.

"Green" Banks

Several "green," or environmentally ethical, banks and investment institutions have funds to finance

renewable energy, sometimes in cooperation with community financing institutes in developing

countries.

high transaction cost
per client and low returns to the bank. Many banks overcome this by charging
high interest rates
and/or bank charges. The World Bank Funds e.g., are normally channelled
through a National Bank
and then a Commercial Bank. The Banks' charges and administration requirements
add up and make
the loan very expensive.
Here can come the role of the NGOs or credit cooperatives as intermediaries to
lend the funds through.
Source: Financing Renewable Energy Projects by IT publications. See
publication list.

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UNDP- GEF- New Trend Supports Micro Hydro
\$15 million is given to the Hilly Hydro Project in India.
The Hilly Hydro Project is the first such project funded by the GEF anywhere
in the world. The \$15
million project is supported by UNDP-GEF and the Ministry of Non-conventional
Energy Sources of
the Government India.
The project aims to set up at least 20 micro-hydro projects and upgrade at
least 100 water mills in the
hilly regions of the North and North-east of India.

Source: P.K. Jayanthan, Hilly Hydro Project c/o TERI, Habitat Place, Lodi
Road, New Delhi 110003,
India.
Ph: +91-114622246, fax: +91-114645229,
e-mail: ind-hhp@teri.ernet.in.
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Unsustainable WB
The study 'The World Bank and the G7: Changing the Earth's Climate for
Business' details 87 loans
made by the Bank since the Earth Summit (FY1993).
They will add at least 36 gigatons of CO2 to the Earth's atmosphere: "an
amount equivalent to more
than ALL current annual GLOBAL fossil fuel emissions". The majority of energy-
sector lending
(87%) goes to traditional supply-side solutions that increase the use of
fossil fuels. Of the projects
analyzed, 71, or 82%, directly involve multinational companies from
industrialised countries as

few guessed how important the role of NGOs would be to this effort. Now, the maintenance and dissemination of Solar Home Systems (SHSs) are in the hands of 11 local organisations and their national NGO, FOPEN Solaire.

Valuable lessons can be learned from the way in which PV dissemination and maintenance are organised in this country, which is situated at the western corner of Africa.

Focus on Maintenance

FOPEN Solaire was formed in 1994 by local cooperatives, in order to pool their resources and provide an advisory body for the dissemination and maintenance of SHSs. At that time, the market for SHSs was at a level of 300 per year and expanding after the removal of import duties on PV materials. That same year the devaluation of the currency (CFA) decreased the general purchasing power to a level at which very few could afford a SHS. While there are more than 1500 SHSs in Senegal, currently FOPEN only distributes 100 new systems per year, while an additional 100 (approximately) are distributed via private companies in Dakar. Now the main activity of FOPEN is to provide spare parts, and train the approximately 30 technicians of the member associations. Most of the spare parts for SHSs are only available through FOPEN outside of Dakar.

Batteries and Controllers: Lessons Learned

The major components of SHSs that need maintenance and replacement are the battery and the electronic charge controller.

It is well known that batteries will not last more than two to four years in SHSs, but in spite of that, the associations in FOPEN found that several of the users could not replace defective batteries because of lack of funds. To overcome this problem, FOPEN organised an instalment plan whereby SHS users pay 45% of the battery cost when they receive a new battery and the rest over as much as four months.

An unexpected problem of the SHSs was that some of the charge controllers were not functioning after

END has studied the barriers to increased use of SHS. In the areas outside the reach of the technicians of the FOPEN associations, it was found that many potential users who might be able to purchase a system, refrained from doing so for fear that they could not afford to maintain the system or get spare parts for it. To address this problem, and to be closer to the members, FOPEN moved from Dakar to the village of Diosmone, almost 100 km east of Dakar and close to the middle of the area covered by the FOPEN associations. This move will make it easier to increase the outreach of the maintenance service beyond the 40% of Senegal that is covered today, and to reach more of the eastern part of Senegal, where many potential users live.

The Way Ahead: Finance

Studies of ENDA also showed that all households that use more than 5,000 CFA/month (\$9/month) on their energy needs (kerosene for lighting and batteries for radios) could benefit economically using a SHS. In rural Senegal, this adds up to about 30% of the 420,000 households that do not have access to the electric grid. The size of this potential of approximately 130,000 households contrasts sharply with an estimated 1,600 SHSs currently in use in rural Senegal. For those families living within the reach of the FOPEN associations, the main obstacle is a lack of funds. To overcome this, ENDA and FOPEN are working on a proposal for a new financing mechanism for SHS users.

More information: ENDA-Energie, B.P. 3370, Dakar, Senegal.

Ph: +221-8-225983/-222496

Fax: +221-8-217595/-235157, e-mail: energie2@enda.sn.

Europe

INFORSE-Europe Meeting 26 June '98

The 7th INFORSE-Europe meeting will be in Århus on June 26, just following the Pan-European

Environmental Ministers' Meeting, also in Århus.

Ministers. The first-draft energy conservation guideline was circulated in the beginning of February.

After the country expert meeting on March 2-3, a new draft will be circulated.

If you want to have a

say in the development of this document, which is likely to guide future policy development in energy

efficiency in Europe, it is time to join the group. Send a message to ove@inforse.dk.

Ministers & NGOs to Discuss Sustainable Energy in June '98

For the first time, sustainable energy will be on the agenda of the Pan-European Environmental

Ministers' Meeting, when they meet in Århus on June 23-25. Among their many topics, they will

discuss a European Energy Conservation Initiative, and maybe adopt a guideline for improved energy

conservation. They might also discuss nuclear power. The present list of official and NGO events is:

-Saturday, June 20: Opening of NGO exhibition on environment, sustainable energy, etc.

-Sunday, June 20: ECO-Forum Meeting, open meeting of the environmental NGOs to set a final

strategy for the ministers' meeting.

-Monday, June 22: Open expert meeting on future energy conservation activities in Europe, organised

by the Danish Energy Agency.

-Tuesday, June 23: Ministerial Conference.

Parallel INFORSE workshop of NGO activities for energy conservation and success stories of

sustainable energy in Central and Eastern Europe.

-Wednesday, June 24: Ministerial Conference with NGO dialogue session on public participation in environmental decision-making.

-Thursday, June 25: Ministerial Conference.

Parallel INFORSE workshop on renewable-energy education package for email/internet use.

-Friday, June 26: INFORSE-Europe Meeting.

Help Protesting New Nuclear Development in Ukraine

The environmental impact analysis of the proposal to complete the two half-built nuclear reactors in

Ukraine is about to be finalized. Then, the EBRD must decide whether it will finance the two reactors

in Khmel'nitski and Rivne. It is important to protest before the decision is made, and NGOs in the CEE

Cogeneration activities are likely to increase, following the EC Commission's Communication that was presented to the energy ministers in December '98. It is proposed to double cogeneration by 2010 from the current level of 9% of electricity production.
Source: Energy...in Demand, Dec. '97

Energy Charter Treaty in Force
With 30 countries ratifying the Energy Charter Treaty, it will enter into force in April '98. A supplementary Treaty is now being negotiated to strengthen the original treaty, e.g., by specifying that ownership of privatised energy companies cannot be kept within a country by any regulation. The negotiations are still closed to NGOs.
Source: ECInform Energy

Sustainable-Energy Successes Exhibited and Documented
The more than 20 success stories with sustainable energy in Central and Eastern Europe that INFORSE-Europe has collected so far will be shown in an exhibition parallel to the Århus '98 and printed in a publication that will be available before the event.
For each of the cases there will be a description of the technology, economy, and the circumstances it is used in, as well as its potential for wider use. In the publication there will be a special category of sustainable energy campaigns made by NGOs. A few good cases are already identified for this.
Contributions with additional cases to the publication and exhibition are very welcome. Expenses to describe the cases can be covered by the project.
For the NGO Exhibition, parallel to Århus '98, the Danish Energy Information Offices (affiliated with OVE, Danish Organisation for Renewable Energy) will also make an exhibition on Danish and European experiences in sustainable energy.

Contact: INFORSE-Europe,
e-mail: ove@inforse.dk.
See on the back page.

Asia

The Demand-Side Management (DSM) Program is one of the conservation activities undertaken by

the Electricity Generating Authority of Thailand (EGAT). It is implemented in collaboration with two electricity distributing authority, the Metropolitan Electricity Authority and the Provincial Electricity

Authority. The DSM Program started in 1993 with a five-year plan (1993-1997) to reduce 238 MW of

peak demand and to reduce electrical consumption with 1427 GWh, with a budget of \$189 million (\$1

US=32 Baht). The Program involves a campaign to promote electricity-efficient fluorescent lamps, refrigerators, and air conditioners.

By the end of September, 1997, the DSM Program had achieved the following:

- reduced the maximum demand with 192 MW;
- saved 1484 Gwh per year of electric energy;
- reduced annual CO2 emissions by 1,107,000 tons;
- spent a budget of 840 million Baht (\$26 million).

The successes of the program have been recognized by a large number of organisations, e.g., the Thai

Environment Club, the Asian Engineering Federation, the Catholic Mass Media, Global Environment

Facilities (GEF), and the World Bank.

The energy-efficient appliances program and related activities in Thailand are still in the beginning

stage. The successful programs work by continuous building-up of awareness and cooperation among

the parties involved: users, educators, government, NGOs, and local manufacturers.

More information:

Sumniang Natakatoong, ATA, Appropriate Technology Association,
143/171-2 Pinklao Nakornchaisri, Bang-Plad, Bangkok 10700, Thailand.

Ph: 66-2-5165362,

fax: 66-2-4343253,

e-mail: rural@alpha.tu.ac.th.

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Electric Efficiency Program in India Helps Utility and its Customers

often curtailed when power shortage occurs during peak load hours. Thus, every peak kWh saved through DSM of the accounts of non-HT customers could be sold to HT customers.

Pilot DSM & Customers

When AEC started its pilot DSM program, a special DSM unit was developed within AEC's

commercial department. Since the inception of DSM programs, the utility-customer relationship has improved considerably at AEC.

The following criteria were used to select the pilot program and to identify programs for the 5-year

DSM plan: impacts on system peak; program visibility to customers; ease of implementation;

implementation lead time; availability of equipment; availability of data; replicability to other utilities;

and market acceptability. Considering these criteria, AEC selected the programs described below.

Water Pumping in Buildings

AEC serves about 4,000 high-rise residential buildings that draw 20 MW of electricity. A program in

progress is aimed at optimizing pumping system performance by selecting appropriately sized high-

efficiency pump sets and by redesigning the piping system. Tests conducted at four sites indicate

energy savings ranging from 22% to 65% and demand savings from 5% to 48%. With full

implementation of these measures by building contractors in a targeted 1,000 buildings and at an

expected total project cost of Rs. 40 million, 10 GWh and 2 MW will be saved.

Reactive Compensation

After successful pilot projects by AEC, an Energy Service Company (ESCO), Asian Management

Limited (AML), has begun large-scale installation of capacitors at 20,000 industrial and commercial

sites, with targeted reactive compensation of 80 MVAR.

Performance is guaranteed by the ESCO, which leases the energy-efficient equipment (capacitors) to

the end users. The monetary savings realized by the customers is used to finance the lease over the

long term.

leasing scheme will
install 800,000 newly designed, energy-efficient lighting fixtures, which are
expected to produce 14
MW and 42 GWh of savings, with a payback period of 4 years. As of mid-1997,
over 200 energy-
efficient lighting systems had been installed.

Other programs address energy efficiency in flour mills, industry, and motors.

The DSM projects were implemented in cooperation with Resource Management
Associates of
Madison, Inc., USA, as a part of the US Agency for International Development
(USAID)-funded
Energy Management Consultation and Training (EMCAT) project in India.

More information:

- Dr. Ashok Sarkar, Energy Policy Analyst, Resource Management Associates of
Madison, Inc., 202
State Street, Suite 303, Madison, Wisconsin 53703, USA. Fax: +1-608-283-2881,
e-mail: ASarkar@rma.com.
- Ahmedabad Electric Company,
att. General Manager V.M Thokar, Electricity House, Lal Darwaza, Ahmedabad 380
001, Gujarat,
India, fax: +91-79 550 7578.
The article is shortened by the editors.

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Americas

Major Step at the First INFORSE Workshop in Argentina
By Marcelo Alvarez and Roque Pedace, REJIMA, Argentina

The INFORSE workshop in October in Argentina attracted 60 interested parties.
A permanent
"Sustainable Energy Forum" was created. Proposals from the Workshop are
expected to act as an
Action Program

Proposed Strategies

The first INFORSE workshop in Argentina, which was held in October 1997, took
a major step to
propose sustainable-energy strategies for the Argentinean Government.
It is expected that these strategies will unite the Government and the
society in common actions

Blockading Renewable

energy in Argentina e.g., legislative framework, taxes, etc. The Forum plans to have a Web page, an open electronic list, and an office for public information.

The NGO Meeting Raised Overall Interest

The INFORSE meeting had more than 60 participants representing all sectors of the society. The meeting, initiated by the INFORSE member REJIMA, attracted many NGOs. Among others, the

Argentinean NGOs were represented by REJIMA, Greenpeace, Taecoro, Solidarydar, Gaia, Genco,

Cenpat, Wise, and Unpa. Along with the NGOs, utilities and the Argentinean Energy Secretariat showed strong interest.

Special international participants were: Emilio La Rovere (Brazil, INFORSE Latin-America

Coordinator); Pilar Chiva (ICAEN, Spain); Jørgen Leming (Danish Energy Agency, Denmark); Rob

Bradley (Ecotec, U.K.), Robert Forrest (Energy Unlimited, Scotland), and Gerardo Monty (CEUTA, Uruguay NGO, INFORSE member).

Meet Again in October'98

Following the success of this first Argentinean INFORSE meeting, it is planned that the next meeting

will be held jointly with ASADES (National Association of Renewable Energies) at ASEDA's annual congress in Salta (north of Argentina) during October of 1998.

More information: REJIMA, Mario Bravo 1029, piso 4 depto A, 1175 Buenos Aires, Argentina.

Ph/fax: + 54-1-9630722,

e-mail: aldarba@starnet.net.ar.

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Off- grid Electricity to 1.4 mill. Argentines
\$314 million is planned to be spent for off-grid electricity to supply 300,000 households. Concessions and World Bank are contributing.

In Argentina, a large-scale "Electricity Supply Program for the Rural Dispersed Population" is

launched. The aim is to provide electric services to 300,000 households (1.4 million inhabitants.) and

PV system. In a small village, a survey of 44 families showed an annual expenditure of \$19,5 per month for illumination and electricity. These costs are comparable to the costs of solar home systems.

Source: Secretaria de Energia att. A. Frabris, Avda. P.Colon 171, piso 9, oficina 903, 1061 Buenos Aires, Argentina, fax +541-342 2868, e-mail: afabri@meyosp.mecon.ar, <http://www.mecon.ar/energia> (in Spanish).
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Referendum Victory for Environmentalists...
Residents Support Assessment of Pickering Nuclear Plant in Canada

In Canada's first-ever referendum on nuclear power, citizens of the Town of Pickering have voted overwhelmingly to call for an environmental assessment on the Pickering Nuclear Generating Stations, before Ontario Hydro proceeds with rehabilitation of the aging reactors. The referendum was placed on the ballot of Pickering's municipal election on November 10, 1997. 87% of Pickering voters (17,038 out of a total of 19,599) supported the YES side in the referendum, calling for an environmental assessment. Durham Nuclear Awareness spearheaded a campaign of door-to-door leaflet handouts, poster displays, and advertisements, urging residents to "Vote YES to Assess!"

The referendum follows a decision by Ontario Hydro last August to temporarily shut down the four reactors at the Pickering "A" nuclear station. The more than 25 years old reactors are the oldest and most accident-prone nuclear power reactors in Canada. Ontario Hydro intends to restart the aging reactors beginning in the year 2000. Chief Nuclear Officer Carl Andognini stated that work to rehabilitate the plant would begin in January 1998. Until February 1998, there has been no decision on the Assessment at the Ministry or at the Ontario Hydro.

More information: Dave Martin, Durham Nuclear Awareness (DNA) Box 104, Uxbridge, ON L9P

The initiative will encourage the participation of all interested individuals, businesses, industries, governments, federal agencies, utilities, and non-governmental organizations.

The Initiative will

provide:

Recognition on a national, regional, and local basis.

Training, technical assistance, and information.

Assistance in accessing low-cost loans.

Further, President Clinton has committed the US Federal Government to install solar energy systems

on 20,000 Federal buildings by 2010.

Source: <http://www.eren.doe.gov/>

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10 Steps in Colorado

The Governors' dream is to turn the State into a World Center for Renewable Energy

Governor Roy Romer of the US State of Colorado recently announced 10 steps that his Office of

Energy Conservation (OEC) will take to increase the use of renewable energy in Colorado.

The plan is a result of his Renewable Energy Task Force's recently released report entitled "Renewable

Energy in Colorado's Future". Romer stated his desire to turn the state into a world center for

renewable-energy industries.

The Task Force' recommendations range from encouraging the designers and manufacturers of homes

to incorporate renewable technologies in their buildings to introducing school children to a renewable

energy curriculum.

More information: OEC, 1675 Broadway, Suite 1300 Denver, CO 80202, USA. Ph: +1-303-620-

4292, fax:+1-303-620-4288, http://governor.state.co.us/gov_dir/oec/.

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Technical Articles:

Straw Bale Houses for Chernobyl Settlers

By Evgeny Shirokov, Byelorussian Division of International Academy of Ecology (BD-IAE). Edited

by Pia Osterfelt OVE, Denmark.

Experimental State Program

In 1997, after the straw-bale building seminar and experience from Druzhnaia, the Government,

following the initiative of the Byelorussian NGO 'BD-IAE', set up an experimental State Program to

build economical dwellings of renewable natural materials. The Byelorussian design institution

Gomelselstroiproekt joint this collaboration, and this led to the design of a 100 - m² farmhouse.

Cheap, Warm and Ecologically Sound

The first farmhouse designed under the State Program was built in a few weeks in the village of

Mikhedovich in south-eastern Byelorussia. Compared with houses in the village, the straw-bale house

saved considerable building costs in both labour and materials. It also uses 3-4 times less heating energy.

Compared to the brick and concrete buildings in the same village, the straw-bale building is much

cheaper, warmer, and better for the environment. After being stuccoed, it is very strong, fire resistant, and durable.

Straw as a Building Material

From very early times straw has been used as a building material: mixed with mud and clay, or as roofing material.

The modern straw-based building technique is based on a centuries-old practice in the USA. It was

started by early settlers in Nebraska, where lack of traditional building materials forced them to experiment with other materials.

The modern use of agricultural baling equipment has turned straw into building blocks.

Roughly, there are two types of building technique:

The Nebraska method, in which stacks of straw-bales form the weight-bearing construction of the house.

The Post-and-Beam technique with bale in-fill, where a post-and-beam structure carries the weight of the roof.

available in most regions of the world, with little or no transportation cost. These factors make it well suited self-help building method for people with limited resources. It offers a low-cost house that meets high standards.

More information: Evgeny Shirokov, BD-IAE,V. Khorujei 31a, of. 523, Minsk 220002, Byelorussia.
Ph/fax: +375-017-2347527
e-mail:Eco@ecoprom.Belpak.minsk.by.
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New Low-Energy Greenhouse Concept
By Lars Yde, Folkecenter for Renewable Energy in Denmark.

Half of the energy consumption of conventional greenhouses in Denmark. Energy consumption competitive with that of producing imported open-land fruit.

Economically Feasible
Commercial greenhouse products in the northern hemisphere is highly energy-intensive. Their energy index, showing the ratio between production value and energy consumption, is 2350, while that of average industrial products have a value of 50. One kg of tomatoes or cucumbers consumes 13 kWh, which corresponds to more than its own weight in oil. In attempt to reduce this, the Organic Agriculture Council of the Danish Ministry of Agriculture gave support to the development of a commercial low-energy greenhouse. It seems likely that, in the long run, the practice of growing organic fruit in greenhouses with an unlimited consumption of fossil fuel will no longer be possible. Therefore, it is important to have alternative solutions ready even if they are more expensive, which is the case of the low-energy greenhouse. On the other hand, it is possible to obtain a higher price for organic products. In Denmark, it is also possible to get economic governmental support from the CO2- Fund (fund from CO2 tax revenue) for part of the construction costs of a new low-energy greenhouse. All in all, our calculations indicate that the concept is economically feasible.

The low-energy house does not use heat pipes, oil burner, boiler, or chimney. Instead, it is heated by solar radiation, artificial light, and the waste heat from the heat pump. Since the heat losses from the house are small, most of the heat derived from the artificial light and from the heat pump can be recovered and used elsewhere.

Dehumidifying via heat pump means that windows need not be opened for ventilation in the wintertime, which removes another possible avenue of heat loss. Another advantage of using heat pumps is that a certain amount of excess heat can be exported out of the greenhouse and used to heat packing facilities, private residences, or other greenhouses, or it can be sold to a local district heating grid. See fig.1.

Fig. 2 shows wind electricity consumption in a low-energy greenhouse with 0 to 160 W/m² installed artificial light, compared to fossil fuel used in a traditional greenhouse or in the transport of open-land fruit from Southern Europe to Denmark. Series 1 shows energy consumption and series 2 shows wind electricity consumption minus exported heat.

More information:

Folkecenter for Renewable Energy, Kammersgaardsvej 16, Sdr. Ydby, 7760, Hurup, Thy, Denmark.

Ph:+45-97956600, fax:+45-97956565, e-mail: larsydefcenergy@www.nvn.dk

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Publications on Financing:

-Financing Renewable Energy Projects, A Guide for Development Workers

A Guide to finance a renewable energy project in the developing world.

It includes the available funding sources, the role of different organisation, the financial process,

checklist, case studies on PV financing.

By Jenniy Gregory, et.al. from Intermediate Technology Development Group and Stockholm

Environmental Institute. 146 p. 1997

Contact: Intermediate Technology Publications, 103-105 Southhampton Row, London WC1B 4HH,

UK

Ph: +44-1714-369761,

-Compendium of Funding Sources for Renewable Energy Projects

The Guide summarises a myriad of funding information in a concise and practical way. It identifies

funding sources for: basic research, development, demonstration, commercialisation. Australian

Federal, State and international programs are covered as well as on-line databases, international aid

funding, business opportunities, venture capital and indirect (non-financial) assistance programs.

The Guide will be updated every 3 months. 1 year hard copy and disk cost \$500.

It is free to ACRE

members.

Contact: Carrie Sonneborn, Policy Analyst, Australian Cooperative Research, Centre for Renewable

Energy (ACRE) Ltd, Murdoch University, South St, Murdoch, Western Australia 6150.

Ph: +61-8-9360-2876,

fax: +61-8-9360- 6421,

e-mail: sonnebrn@central.murdoch.edu.au.

-Financing Investments in Renewable Energy: The Role of Policy Design and Restructuring

Financial models of cases of wind power and PV. Tax Policies and tax appetite. Electric industry

restructuring and long-term contracts. Surcharge-funded policies, production incentives, above-market

contract payments. Green marketing programs. Low-interest subsidised loans and guarantees.

By Ryan Wiser and Steven Pickle

March 1997, 88p.

Contact: Environmental Energy Technologies Division, Ernest Orlando Lawrence Berkeley National

Laboratory, University of California, USA.

Ph: +1--510-486-5474,

fax: +1-510-486--6996,

e-mail: pajuergens@lbl.gov,

<http://eande.lbl.gov/EAP/UPP/reports/>

European Union Activities for Sustainable Energy in Development

See article on page no 4.

Contact: INFORSE Secretariat:

P.O. Box 2059, DK-1013, Copenhagen K, Denmark.

Ph: +45-33-121307,

International Financial Institutions:

The World Bank (IBRD):

<http://www.worldbank.org/>

The World Bank and Global Energy Efficiency Initiative (GEEI):

"Energy-Environmental Interaction" : <http://www.geei.org/>

E-mail conference on Energy and Environment Strategy:

Send "subscribe strategy" to e-mail: majordomo@geei.org

International Finance Corporation:

<http://www.ifc.org/>

International Monetary Fund:

<http://www.imf.org/>

European Bank for Reconstruction and Development:

<http://www.ebrd.com/>

European Investment Bank:

<http://www.eib.org/>

Asian Development Bank:

<http://www.asiandevbank.org/>

Inter-American Development Bank:

<http://www.iadb.org/>

African Development Bank:

[Http://www.africandevbank.com](http://www.africandevbank.com)

bank.com

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Events

** Event with INFORSE participation

March 8-9, 1998

European Conference of Renewable Energy on Roofs & Facades, Holland

EMM Ltd., PO Box 259, Bromley, BR1 1ZR, UK. Ph: +44-181-2898989, fax: +44-181-2898484.

e-mail: sustain@emml.co.uk

March 14, 1998

International Day of Against Dams and for Rivers, Water and Life

Demonstrate, Educate, or Celebrate

Info: Aleta Brown, International Rivers Network, 1847 Berkeley Way, Berkeley, California 94703,

USA. Ph: +1-510-848-1155, fax: +1-510-848-1008, e-mail: irn@irn.org.

March 23-25, 1998

Global Small Hydro Conference, Hangzhou, China

Info: HIC, PO Box 607, Hangzhou, 310006, China.

May 4-6, 1998
Renewable Energy Technologies in Cold Climates, Montreal, Canada
Info: SESCI, 116 Lisgar str. Ste. 702, Ottawa, Ontario K2P 0C2, Canada. Ph:
+1-613-234-7004, fax:
+1-613-234-2988, e-mail: retccc.98@sympatico.ca.

May 25-30, 1998
AGROENVIRON 98, Pakistan
Info: Faculty of Agricultural Engineering & Technology, University of
Agriculture, Faisalabad,
Pakistan. Ph: +92-41-3028189/ext 434, fax: 92-41-647846 / 30769.

April 6 -May 17, June 3-11, 1998
Small Hydro Workshops, China
Free for trainees from developing countries
Info: HRC, Hangzhou Regional Center for Small Hydro Power, D. Pan, PO Box
1206, Hangzhou,
China 310012.
Ph: +86-571-8086586, Fax: +86-571-8062934,
e-mail:hrc@public.hz.zj.cn

May 27-30, 1998
5th European Conference and exhibition, Solar Energy in Architecture and Urban
Planning, Bonn,
Germany
Info: Eurosolar, The European Association for Solar Energy, Ph: +49-228-3623-
73, fax: +49-228-
361279, e-mail: inter_office@eurosolar.org.

June 8-11, 1998
Biomass for Energy and Industry, Würzburg, Germany
10th European Conference & Exhibition
Info: WIP, Sylvensteinstr. 2, 81369, München, Germany. Ph: +49-897201235, fax:
+49-897201291.

June 18-22, 1998 **
1st International Workshop on Media, Environment and Citizens, European Film
Collage, Ebeltoft,
Denmark
Info: INFORSE Secretariat, (see p.2), <http://www.inforse.dk/media>

June 23-25, 1998 **
Environment for Europe, 4th Pan-European Conf. of Environment Ministers
(Århus '98), Århus,

June 22-26, 1998
Solar Thermal Concentrating Technologie Odeillo France
Info: CNRS/IMP BP 5 Odeillo, 66125 Font-Romeu Cedex, France. Ph: +33-4-6830-7758, fax: +33-4-6830-2940, e-mail:claudie@imp-odeillo.fr.

July 6-10, 1998
2nd World Conference and Exhibition on PV, Wien, Austria
Info: WIP, See at event June 8-11, 1998

July 6-10, 1998
1st World Congress of Health and Urban Environment, Madrid, Spain
c/ Londres, 17, 28028 Madrid, Spain. Ph: +34-1-3612600, fax: +34-1-3559208,
e-mail:
tilesa@wpa.es.

August and September, 1998
Small Hydro Conferences in Vietnam and Brazil
Info: HRC, See event at April 6 - May 17 event.

August 23-28, 1998
ACEEE Summer Study, Pacific Grove, California
Energy Efficiency in Buildings
Info: ACEEE, American Council for an Energy-Efficient Economy, 1001
Connecticut Avenue, NW
Suite 801, Washington, D.C. 20036, USA. Ph: +1-202-429-0193, fax: +1-202-4290193.

September 14-17, 1998
EuroSun 98, ISES-Europe Solar Congress & Exhibition, Portoroz, Slovenia
Info: E-NET - Centre for Efficient Use of Energy, 1000 Ljubljana, Ambrozevtrg
5, Slovenia. Ph: +386-61-1729284, fax: +386-61-1729283, e-mail:e-net@siol.net.

September 20-25, 1998
WREC '98. Florence, Italy
World Renewable Energy Congress
Info: A.A.M. Sayigh, World Renewable Energy Network, 147 Hilmanton, Lower
Earley, Reading
RG6 4HN, UK. Ph/fax: +44-118-961-1364/-1365.

October 6-8, 1998
EEBW '98, Prague, Czech Republic

Hong Kong.
Ph: +852-2574-9133, fax: +852-2574-1997, e-mail: office@adal.com,
<http://www.adal.com>.

October 20-22, 1998
Int. Conference & Exhibition on Renewable Energy & Energy Conservation for
Buildings, Shanghai,
China
Info: Rm. 1322, Bldg. 3, 1486 Nanjing Rd. (W), Shanghai 200040, P.R. China.
Ph: +86-21-62479796,
fax: +86-21-62049481, e-mail: wjyao@online.sh.cn.

November 19-21, 1998
EPIC'98, France
2nd European Conf. on Energy Performance and Indoor Climate in Building
Info: Laboratoire des Sciences de l'Habitat, CNRS D 1652, Ecole Nationale des
Travaux Publics de
l'Etat, Ph: +33-4-7204-7027, fax: +33-4-7204-7041, e-mail:
secretariat.lash@entpe.fr.

February 10-13, 1999
WREC '99, Perth, Australia
World Renewable Energy Congress
Renewable Energy Technologies and Policies for Sustainable Development
Info: Kuruvilla Mathew, Environmental Science, Murdoch University, Murdoch WA
6150, Australia.
Ph: +61-8-9360-2896, fax: + 61-8-9310-4997, e-mail:
mathew@essun1.murdoch.edu.au,
<http://wwwphys.murdoch.edu.au/acre/>.

May 25-27, 1999
SUSTAIN '99, Amsterdam, Holland
The World Sustainable Energy Trade Fair: Renewable Energy, Waste-to-Energy,
Sustainable
Transport
Info: European Marketing Ltd. PO Box 259, Bromley, BRI IZR, UK. Ph: +44-181-
289-8989, fax:
+44-181-289-8484, e-mail: sustain@emml.co.uk, <http://www.emml.com>.

July 4-9, 1999
ISES Solar World Conference, Jerusalem, Israel
PO Box 50006, Tel Aviv 61500, Israel. Ph: +972-3-514-0000, fax: +972-3-517-
5674, e-
mail: ises@kenes.com. <http://tx.technion.ac.il/~meryzse/ises99.html>

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