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About this issue

Beside the small islands (see editorial), this issue is featuring a number of themes. There is an overview of renewable energy development in China, the largest renewable energy producer in the world, but also a country with many problems, from an energy crisis to a lack of human rights. We can all learn a lot from Chinese experiences, and vica versa. Further, there are articles about the USA situation for the poorer energy consumers, about a new UN Committee to increase UN sustainable energy activities, and about the new GREECA cooperation. A large part of the newsletter describes the increasing number of INforSE activities, showing the activity of energy NGOs all over the world.
Editorial: Small Islands - Important Partners in Sustainable Energy Development

Apart from problems of economic development, militarization, and colonization, small islands struggle with many environmental problems imposed by external forces. They are the most vulnerable victims of the rising sea level and the unstable climate, caused by the industrialized countries’ emissions of greenhouse gases. Their waters are subject to overfishing and toxic waste dumping.

On the other hand, small islands have a lot to offer the world in biodiversity, cultural integrity and indigenous knowledge. In terms of sustainable energy, some of them now offer a vision of successful conversion, in which all energy is derived from renewable resources within few years.

Supply of energy from fossil fuels is a headache to many islanders, due to high transportation costs. The cost of electricity generation from local diesel plants can be many times higher than those known in the industrialized world. Since environmental and social costs in the future will be included in fossil fuel prices, all other countries will face a similar situation.

The present high energy costs have motivated small island governments to give priority to the renewable alternatives in their official planning. Some islands now get all electricity from renewable sources, and their goals for the future are much more ambitious than those of the "progressive" richer countries.

In this way, the small islands are playing an important role as pioneers in sustainable energy development. The organizational and technical experience that these small nations gain on how to conserve energy and supply all energy needs from renewables will be important for all of us in the future. We need the inspiration.

On the other hand, the small islands have limited access to technical know-how and resources. They need to cooperate with other developing and developed countries. This mutual need creates excellent possibilities for an equal partnership with the small islands in sustainable energy development.

René Karotki, executive secretary, Forum for Energy and Development.

INforSE Campaign on Sustainable Energy for Social Development

By Gunnar Olesen

As mentioned in the previous issues of Sustainable Energy News, the INforSE campaign is well under way. While the majority of the campaign activities will take place on a regional level, a number of joint activities are now scheduled for the coming year.

The INforSE campaign paper, highlighting the campaign theme and its implication for the different world regions, will be published in November. It will be sent to all INforSE organizations and will be available from the INforSE secretariat and the regional coordinators.

An INforSE campaign workshop in November in Copenhagen will channel the regional campaign strategies into a joint proposal for the UN Social Summit in Copenhagen, March 1995. It will also prepare the campaign activities for 1995.

At the Global Forum ’95, also in Copenhagen and parallel to the UN Social Summit, a workshop and an exhibition will be held on the campaign theme.

Finally there will be a campaign presentation in March ’95, at the global NGO conference before the official UN Climate Summit in Berlin.
Regional News - Africa

West African INforSE Meeting

Within the framework of its focal-point activities for western Africa in the International Network for Sustainable Energy (INforSE), the Energy Program of ENDA-TM organized the first informational sub-regional assembly at Palmarin (Senegal). The meeting was held from 6 April to 9 April, 1994.

About 20 participants were invited, but only about 15 were able to take part in the gathering. In particular, two participants, one from Burkina Faso and one from Guinea, were unable to take part in the meeting due to problems with transportation. The participants who did take part in the meeting are the representatives of non-governmental organizations (NGOs), of associations, and of village groups, all active in the area of renewable energy technologies in the sub-region of western Africa.

The objective of the assembly was to inform the participants of the existence of the network INforSE, to permit the exchange of experiences, and to identify the problems with which the NGOs and the associations are confronted in the domain of renewable energy sources and technologies. The meeting served equally well to allow elaboration of a regional plan of action and the collection of proposals for the international campaign for renewable energy sources.

International campaign for renewable energy sources

The participants of the meeting of the focal point for western Africa suggested that the campaign place its emphasis on obtaining financing to support the projects of groups and member associations of the network, the decentralization of the celebration of the next SunDay (24 April) in the developing countries. The idea is to make this day an international day for solar energy.

Lobbying of international institutions

The realization of the objectives of the network requires maintaining permanent contacts with the international institutions and the financial backers most likely to furnish aid for the promotion of renewable energy sources. Contacts will be established with the World Bank, the ONUDI, the European Union, and some other international institutions based in Washington. A lobbying document is also in preparation for the next summit meeting on social development, in Copenhagen.

The INforSE International Prize

The INforSE International Prize will recompense the NGOs and/or the individuals who distinguish themselves in the domain of new and renewable energy technologies. The meeting participants suggested placing the emphasis on the work of the NGOs rather than on that of individuals. According to them, the choice of the NGOs should take into account the nature of the technology concerned and the approach utilized for its propagation. Each recipient organization should also engage itself in utilizing the prize to promote renewable energy technologies. On the technical side, the emphasis should be placed on technologies made from local materials and adapted to the environment. These technologies also should be easily accessible to the populations.

In terms of propagation, the accent should be put on the methods of conveying the best-performing technologies in a way that results in wide distribution of renewable energy technologies.

African Regional Energy and Environment Policy Seminar

The African Energy Policy Research Network, the Nairobi-based Foundation for Woodstove Dissemination (FWD) and the National Institute of Development Research and Documentation, University of Botswana, with support from the Swedish Agency for Research Cooperation with Developing Countries (SAREC) and the Dutch Government, recently held an African Regional Energy and Environment Policy Seminar in Nairobi, Kenya from the 17th to the 18th of March 1994.

The main objectives of the seminar were:

- to promote interaction between senior African energy policy makers and eminent energy researchers;
- to present key findings of the ongoing 16-country AFREPREN energy policy research programme;
- to identify priorities for future energy policy research initiatives in the region; and

The seminar brought together senior energy policy makers from the region as well as eminent specialists from the African academic community involved in the African energy sector. These were drawn from 13 eastern, southern and western African countries.

The seminar was to provide an impetus for launching an African Energy Initiative that would lay the groundwork for the development of an environmentally sound African Energy Charter.

Further information: Mr Stephen Ka- rekezi, FWD/AFREPREN, P. O. Box 30979, Nairobi, Kenya. Ph: +254 2 566032, fax: +254 2 561464/740524/ 5662321,
Climate and Africa Project: An Assessment of African Policy Options and Responses

This project is being implemented by the Stockholm Environment Institute (SEI) and the African Centre for Technology Studies (ACTS), financed by the Government of Sweden. The objective of the project is to prepare background materials and develop a range of policy options that will assist African Governments in negotiating more effectively in the Conference of the Parties scheduled for early 1995.

The analysis is based on an examination of the implementation of actions on emission and sinks in the countries involved in the project. Eight countries were selected and were provided with modest funds to explore policy options and responses pertaining to proposed obligations to the Climate Convention.

The African Energy Policy Research Network (AFREPEN) is coordinating the Eastern Africa component of this programme, which includes Seychelles and Uganda. The region is concentrating on the transport sector. The Southern Africa region and the Northern Africa region are focusing on the industrial and the oil sectors, respectively, while the Western African region is examining the biomass energy sector.

Further information: African Centre for Technology Studies (ACTS), P. O. Box 45917, Nairobi, Kenya. Ph: +254 2 743995, e-mail: ACTS@elci.gn.apc.org.

More on KENGO’s Successful Developments

More than 80% of Kenya’s population is found in rural areas, where 85% of the population relies on firewood as a main source of energy. This leads to a present consumption of 21 million tonnes of firewood per annum.

KENGO has successfully developed and distributed three types of cookstoves that are more efficient and less polluting than the traditional open fire. (These were reviewed in Soft Energy Worldwide, May 1992 and SEN issue No.4)

The demand for the Kuni Mbili Jiko (KMJ) stove has escalated since its development in 1989. Today 20,000 households in rural areas are using these KMJs and 3000 KMJs are used in the refugee camps. In the first half of 1994, another 1500 are planned to supply refugee camps and another 2500 will be in use in the north-eastern part of the country (Garissa). It is estimated that presently 2000 KMJs produced per month by the end of the year.

The stove has an efficiency of 38%, an increase by 50% over that of the traditional open fire. The fact that it burns wood directly makes it even more efficient, as losses are incurred from conversion of wood into charcoal when using the charcoal stove Kenya Ceramic Jiko. The success of the KMJ stove is mainly due to the fact that it uses wood, which is the major source of energy in use in rural areas.

KENGO (Kenya Energy and Environment NGOs) is a national network of over 300 organizations working on renewable energy, environment and sustainable development. KENGO was founded in 1981 and it is now starting a cooperation with InforSE. P. O. Box 48197, Nairobi, Kenya. Ph: +254 2 749747/748281.

Earth Charter under Development

UNCED (UN Conference on Environment and Development) in Rio de Janeiro, 1992, did not manage to elaborate an earth charter on environment and development. Now, the Earth Council and the Netherlands-based NGO Green Cross International launch an initiative to develop an Earth Charter based upon the work done by NGOs and governments during the Rio process. Their work will be carried out in two phases:

- to build upon the work done to date, they will prepare an initial version of the charter in time for the 50th anniversary of UN in 1995;

- they will open a worldwide process of discussion and negotiation to a final version of the charter, which will be submitted to the UN in 1997, 5 years after UNCED, for worldwide approval.

Information from: Earth Council, P. O. Box 2323-1002 San Jose, Costa Rica. Ph: +506-23 3418, fax: +506-55 2197, e-mail: abarcena@igc.apc.org.
Asian Pacific INforSE Meeting

The first regional meeting of INforSE Asia Pacific took place May 10-14 in Batangas City, Philippines with 11 participants from 4 countries. Participating organizations were PCATT, Philippine Center for Appropriate Technology and Training; AGTALON, Philippines; REAP, Renewable Energy Association of the Philippines; Save the Planet Earth Movement, Philippines; and CITNAR, Chinese Academy of Science, China.

At the meeting, a project proposal for a resource assessment on the status of renewable/sustainable energy systems in the Asia-Pacific Region was developed. The objective of the project is to assess the status of sustainable energy systems at the R&D level as well as their applications in Malaysia, Thailand, Indonesia, China, and the Philippines.

Source: Benjamin Gertes, INforSE Asia-Pacific/PCATT, 224 Diego Silang St, Batangas City, Philippines. Fax: +63-2-9229750, c/o RCPI Batangas City.

Workshops on the Philippines

A workshop/exhibition on renewable energy was held in Manila February 26 - March 1, 1994. The workshop was a joint undertaking of INforSE contacts in China and INforSE Philippines. From China, 3 persons participated from CISNAR, Committee for Integrated Survey of Natural Resources. A similar workshop/exhibition was held in Batangas on May 1-6, 1994. The highlight of this visit was a formal agreement between CISNAR and PCATT on a Technology Exchange Program between the two countries.

Source: B. Gertes, INforSE Asia-P.

Biogas Legislation Proposal

Pollution and waste from livestock farms are a common problem in the region. Biogas plants can be the most appropriate solution to this problem. To highlight our [INforSE Asia-Pacific and PCATT, editors’ comment] political actions along this line, we have selected a town, San Jose in Batangas, Philippines, in which this problem is so acute that the government threatened farmers with closure of their farms because of pollution. We are teaming up with lawyers and lawmakers to make a local regulation that will compel farm owners to construct biogas units. A biogas demo unit is now under construction to show this solution. This political action can be duplicated throughout the region.

(Source: B. Gertes, INforSE Asia-P)

RE Power at the Philippines

In the Philippines, geothermal steam accounts for 23 percent of the electricity generated. Facing an increased power shortage, the National Power Corp has awarded a contract to a new 120 MW geothermal facility that is expected to be operational in 1996. Further, the Philippines is seeking Chinese assistance to refurbish and re-finance the installation of 90 small hydroelectric generators with a total capacity of 40 MW that were acquired from China 10 years ago, but have never been used.

(Source: SCNCER Newsletter, 12/93)

Solar Cookers in India - Performance Standards Introduced

Cooking accounts for almost 50 % of the energy consumed in the household sector in India. The Ministry for Non-conventional Energy Sources (MNES) launched a subsidy scheme for solar cookers in 1982, making them available at a price substantially lower than the manufacturing cost. The MNES’ restrictive policy, that a user was granted a subsidy only on such cookers as were manufactured according to the strict MNES specifications, did not make the solar cookers popular in rural areas. Now MNES is modifying its policy so that manufacturers have a freer hand designing and marketing all kinds of solar cookers, as long as they conform to MNES’ performance standards.

The All India Women’s Conference (AIWC), promoting solar cookers since 1988, tries to find solutions for the drawbacks and problems of the solar cookers. Among others, the problems with the older models were: lack of user awareness, high price, only marginal portability, manufacturing quality differences, not enough insulation, ineffectiveness on cloudy days, and lack of integration with Indian cooking habits. To overcome these problems, the Lucknow-based Appropriate Technology Development Association (ATDA) improved many technical details of the solar cookers. A booklet published by the Gujarat Energy Development Agency (GEDA) containing a user’s guide and 250 recipes made the solar cookers so attractive that 32,000 solar cookers were sold in the area. Unfortunately, only 20-30 % were sold in rural areas. The reason for this is probably that the solar cookers are considered to be a supplementary cooking device. To improve the decentralization of the distribution, a training scheme is being introduced to local manufacturers involving the Consortium on Rural Technology (CORT).

(Down to Earth, March 15, 1994)
Solar Drying

The previously presented idea of food processing through solar drying to create jobs and enhance income (see Sustainable Energy News 3, p.6) has attracted further interest:

- ApproTech Asia presented this project in a recent Asia-Pacific NGO meeting on women's development, April 14-16, 1994;
- several other groups are interested in its ability to generate livelihood opportunities;
- some Philippine congressmen are now supporting the project.
(Source: B. Geries, INFoRSE Asia-P)

Private Power in Thailand

The Thai Government has recently opened the power market to private producers. The national utility EGAT is seeking to purchase up to 300 MW from small independent projects based on renewable energy or cogeneration units of less than 50 MW. In response, ten sugar companies have applied to sell power at a level of 50 MW.
(Source: SCNCER Newsletter, 12/93)

Narmada Fights Continue

Both local and international protest actions against the Sardar Sarovar Dam are continuing. In May, the local authorities tried to hinder the protests by setting up roadblocks to keep demonstrators out of the submergence zone, and there has been a protest ban (including anti-dam singing, dancing ...) in the Dhule district. NBA has lodged a 59-page petition calling for the Supreme Court in New Delhi to order a halt to construction on the dam and open the sluice gates. On May 20, the court admitted the petition. The four state governments and other authorities involved must respond within 4 weeks. The hearing of the case will be on July 11, but the court has decided that the work can go on until then.

The petition and an overview of the Sardar Sarovar Project can be ordered from IRN, Patrick McCully, IRN (International Rivers Network), Berkeley, CA 94703, USA, Ph: +1 510 848 1155, fax: +1 510 848 1008.

Garbage to Gold in India

Simple technologies are being introduced to convert garbage into fuel and bio-fertilisers to enable the Bombay Municipal Corporation (BMC) to deal with the metropolis' mounting garbage and, at the same time, to make the disposal a paying business.

One such project is a garbage processing plant that was built at Deonar dumping ground in Bombay in 1992. This plant is processing garbage into fuel pellets and has an estimated daily production capacity of 80 tonnes of fuel pellets. The plant presently produces 30 tonnes of pellets daily in various sizes to suit users' requirements. However the composition and, as a consequence, the calorific value of the garbage varies. It is claimed that the standardised pellets produced by this fine-tuned technology have a calorific value almost equal to that of coal. The ash content of the fuel pellets is only 5 to 10%, compared to 35% for most coals used in Indian boilers.
(Source: Down to Earth, 15/2 1994)

PV Growth Expected in India in Near Future?

"India is on the threshold of a period of explosive growth for renewable energy in general and photovoltaics in particular" according to a study, The Renewables Opportunity in India, prepared by Shering Energy Associates of Princeton, NJ, USA for the National Renewable Energy Laboratory in Golden, CO in advance of an expected US trade mission in India later this year by US PV module manufacturers.

Decreased restrictions

Most of the barriers to foreign suppliers of renewable technology and products have been eliminated and the private sector is being encouraged actively by the Indian Government and Ministry of Non-Conventional Energy Sources. The Indian Electricity Supply Act of 1948 has been changed since 1991.

Wind, PV, Small Hydo
A $450 million fund was established by the World Bank through the Global

Environmental Fund together with Indian national resources. The fund will support commercialization of renewable energies in India by strengthening the Indian Renewable Energy Development Agency Ltd.'s capacity to promote private investments in the sector. The fund includes a reserved $55 million for PV, $125 million for windfarms, and $94 million for small hydro systems.

PV Water pumps
The national program for installation of PV water pumps in unelectrified villages started in 1993 and calls for 40,000 PV powered water pumps by the year 1997-98.

PV telephones
Rural PV powered telephones are being installed at the rate of 30,000 per year.

The combination of the above three programs is expected to increase the Indian market demand to 10 MW per year within the next few years.
(PVIR)

Energy Cycle Reached a Critical Point in India

Dr Pachauri of the Tata Energy Institute (TERI) warns that India's growing emphasis on energy production may boost economic development, but it will be disastrous for the environment.

The institute is raising public awareness of the impacts of present and planned energy systems fuelled by coal, thermal, and hydro power stations: effects like deforestation, acid rain, ash-contaminated drinking water, etc. Dr Pachauri calls for a radical shift to natural gas and alternative technologies, but expresses doubts that the government will want to put a brake on industrial development and rethink its energy strategy.
INforSE Campaign Taking off in Europe

The INforSE Europe Campaign on energy and employment is now well under way. With 17 million unemployed persons in the EU, the focus will be on job-creating activities that can be started with public money freed by reducing social security and unemployment benefits, and multiplied by private investments. With the right selection of measures, such a strategy can reduce unemployment without increasing the public expenses simply by a smaller shift in public expenses and a larger activation of private capital. The right selection of measures includes raising the efficiency in domestic energy use, utilization of solar heat in active and passive systems, energy efficiency improvements in the commercial and the industrial sector, a shift to more efficient transport systems, and others like production of wind turbines and efficient biomass use.

The first version of the background paper for the campaign is ready. It estimates the employment effects of implementing a number of sustainable energy solutions. The result of the first draft for EU is that these proposals can create about 600,000 jobs directly and an additional about 1,300,000 jobs by induced effects, all lasting for more than 10 years. The proposed elements of a sustainable energy strategy will play a significant role in reducing the unemployment in the EU. It is estimated that the states can support the implementation of the proposals with at least 25% of the investments and still have a positive effect on the state budgets, because of the reduced expenses for unemployment benefits and an increased tax-revenue.

In August and September, a new, more comprehensive study will be made by interested organizations of INforSE and Climate Network Europe, if sufficient funding from the EU is obtained.

INforSE Europe Meeting, July 9

Immediately after the European NGO energy seminar in Deister, Germany, the annual INforSE Europe meeting will take place, also at Energie- und Umweltzentrum am Deister. This year the meeting is special, because it is hoped that the bylaws of INforSE Europe will be approved, and thereby turn the network into a formally registered association, eligible for international support.

The meeting will also discuss next year’s action plan for INforSE Europe and the ongoing INforSE Europe campaign.

Further information, including agenda as well as draft bylaws and action plan from INforSE Europe, att. Gunnar Olesen, Willemsesøde 14, 2100 Copenhagen Ø, Denmark.

European NGO Energy Seminar

INforSE Europe and Umweltzentrum am Deister are organizing this year’s European NGO energy seminar. Major elements of the seminar will be Eastern and Western NGO cooperation on energy, status of renewable energy technologies and energy efficiency, INforSE Europe Campaign, and a proposal for an Energy Contact Central and Eastern Europe, similar to the Dutch MilieuKontakt Osteuropa. The seminar will consist of plenaries with presentations/discussions, workshops, and a one-day tour of sustainable energy projects around Hannover. See also the last issue of Sustainable Energy News.

Presently 30 participants from East and West are registered for the seminar.


OECD Project on Environmental Implications of Subsidies to the Energy Sector

The Organization for Economic Cooperation and Development (OECD) Environment Directorate has undertaken work to assess the environmental consequences of governmental support to the energy sector. The project, comprising a scoping study and five case studies, is expected to be completed by the end of 1994.

The case studies include: coal in OECD countries; transport sector in France, Hungary, Japan and USA; energy sector in Russia; direct subsidies to the energy sector in USA; electricity sectors in selected countries.

(Source: Energy in Demand)
The British Change
The tall white turbines are
or
the Issue from Environment to Esthetics
Elegant? Charming? Gracious? Inspiring?
Awkward? Clumsy? Gauche?
Sir Bernard Ingham, former press secretary to Thatcher, member of the Country Guardian (an anti-windmill pressure group), and a consultant for British Nuclear Fuels, says: "People who think the windmills are attractive are esthetically dead". As a consultant to the British Nuclear lobby, he has found an excuse against the environment-friendly windmills: the esthetics!
This and other similarly superficial campaign slogans and protests are undermining support for windmills in Britain. Results can be seen in places like Herefordshire, on the English border with Wales, where villagers voted recently, 170 to 0, to oppose a wind farm for their county. On the other hand, surveys show cases in which fewer people think that existing windmills destroy the scenery than had expected them to do so before they were built. "Some people view the windfarms as elegant and inspiring symbols of nonpolluting energy" says Fiona Weightman from Friends of the Earth. "You have to weigh being able to see a few wind turbines against being poisoned by acid rain".
Twenty new wind farms are already being planned, and an additional 230 have been proposed...
(Source: Newsweek, March 28, 1994)

Regional News - Latin America

Regional INforSE Meeting in Rio de Janeiro
The regional meeting of Latin America will take place in Rio de Janeiro, June 28-29. The meeting will launch the Latin American INforSE network, and will discuss the INforSE campaign.
The meeting is moved from Brasilia to Rio de Janeiro, because the meeting of the ELAN network in Brasilia is postponed until 1995, and it was too difficult to set up a separate INforSE event in Brasilia in 1994.
Further information on the meeting: Emiile Lebre la Rovere, IED, c/o COPPE, Universidade Federal de Rio de Janeiro, CP 68565, 21945-970 Rio de Janeiro, RJ, Brazil. Ph: +55 21 280 8832, fax: +55 21 290 6626.

Solar-Based Rural Electrification
Enersol Associates, Inc. is cooperating with NGOs in the Dominican Republic as well as with other Carribean and Central American countries to disseminate photovoltaic systems for rural electrification. Their dissemination model includes micro-enterprises that install and maintain the systems, and credit programs with revolving funds. To date, this approach has resulted in over 2,100 small solar-electric systems.
Enersol are seeking sponsors and collaborators to increase these activities. Presently Enersol is sponsored by Citibank, the Rockefeller Foundation, the U.S. Peace Corps, the U.S. Department of Energy, U.S. AID, and many others.
Contact: Enersol Associates Inc, 1 Summer Street, Somerville, MA 02143, USA. Ph +1-617-628 3550, fax: +1-617-623 5854.

Sunpower's Popular Solar Heater - Proposal for Rio '92
The Brazilian Association of Solar Energy Industries (BASEI) was asked to furnish information to the Brazilian Government about possible incentives to promote solar water heating systems in Brazil. Sunpower, a member of BASEI, prepared a CO2 mitigation program in the Paraiba Valley, S. Paulo State, and presented a prototype of a Low Priced Solar Heater. It is directed towards the peak power surge daily between 6 and 10 pm in Brazil, which is due to 20 million electric showers that are turned on then.
Expected life time: 3-5 years
Heating capacity: 3.4 kWh/day
Expected price: $ 60-70
Return on investment: 3 years (1 kWh = $ 0.14): $ 500
Installation: By the owner
Potential market: 25,000,000 homes
Expected private investments in solar heaters: $ 2,500 M
Postponed investments in new electric plants: $ 20,000 M
Yearly prevented burning of fossil fuels: 38,000,000 Barrel oil
Development Status: Practical tests, after UNCED '92, first heating test is beginning now.
Addressing the Energy Needs of America’s Poor

To lift every American family out of poverty in 1989, the Census Bureau calculated, would have cost $5,136 each. The government described that figure as the family’s income deficit. It was less than what America spent in forty-three days in 1991 on the Persian Gulf War.

By Margaret Morgan-Hubbard and Mutsumi R Mizuno, Environmental Action, U.S.A.

The book: Who We Are - A Portrait of America, based on the latest U.S. Census by New York Times columnist Sam Roberts, reveals a great deal about contemporary divisions based on race and class in the United States. The book reports that nearly 32 million Americans are living in poverty. And over the decade of the eighties, the number of millionaires exceeded the number of homeless, which grew to almost half a million.

In the United States and the world over, far too much political, economic and energy-generated power is concentrated in the hands of a very few wealthy individuals and multi-national corporations. This concentration of power has left an increasingly larger number of victims in its wake, through the contamination of nature and the impoverishment of many of the world’s people.

Energy Choices and the Poor

The observation that the protection of our access to foreign oil reserves has long been an objective of our country’s trade and foreign policy is not new. What is noted less often, however, is the connection between the fate of poor people in America and our nation’s energy choices. The large amounts of money that pay for the development and protection of traditional fossil fuel resources could instead be invested in new homes and in renovation of older ones. It could go toward improving schools and hospitals, assisting small businesses and mass transit, and contribute to a variety of innovative community revitalization undertakings. At the same time, it could lead to the creation of many thousands of local jobs, improve the economic viability of many of the nation’s devastated urban neighborhoods, and significantly restore the quality of the air we breathe and the water we drink.

Energy prices in the U.S., stabilized by government subsidies, do not currently take a significant bite out of the budgets of middle-income families; however, poor people pay a significant portion of their limited incomes for energy. Over five million low-income families must pay over 20% of their meager incomes for energy costs alone, leaving little for life’s other necessities. The poor, the elderly and others on fixed incomes and the marginally employed are constantly forced to make choices between such essentials as medical care, electricity, transportation, food and heat. Each year, the number of deaths, attributable to a sudden drop in body temperature or hypothermia and other energy-related causes, increases, because poor people can’t afford to heat their homes, or even find affordable housing in which to live. Across the country, we have witnessed the tragic results of families that have used candles for light and dangerous kerosene space heaters when their utilities were shut off, and the even more tragic exodus of the poor from unaffordable shelter.

An Inadequate System

In the U.S., the poor continue to pay three to four times what average households pay for residential energy. The Low Income Home Energy Assistance Program, a federally funded program, which helps poor people pay their energy bills, faces a constant struggle with insufficient funding and

Environmental Action, U.S.A.
Environmental Action is a twenty-four-year-old national environmental organization that supports grassroots activism. The organization is joining forces with social justice advocates to develop a comprehensive energy, equity and employment strategy. By reducing energy consumption, increasing energy efficiency and producing the energy more locally - from the sun, wind and other renewable and non-polluting sources - EA is convinced that many societal goals can be achieved simultaneously: reduced wasteful energy usage, improved air and water quality, revitalized and empowered local communities, and hundreds of thousands of environmentally sound jobs.
How Can YOU Help the WALK for a Nuclear-Free World ????

- Organise information events all along the route. We will carry a slide-show and have brochures on the issues we are walking for. Invite local speakers to these events.
- Arrange for a parking space and permit for our mobile renewable energy exhibition in every village and town we will visit. A truck will travel along with the walkers. Not just an ordinary truck, but one that can park on any market-square, and can become an exhibition on renewable energy. The truck was used by the Folkecenter for Renewable Energy in Denmark, and travelled along the Baltic coast, and in Czechoslovakia and Hungary. In 1995, the truck will come through your area with the walkers and inform the public on energy savings and renewable energy.
- Announce the publication of two NEW booklets in newsletters and papers. For Mother Earth invited two organisations to write comprehensive booklets in view of its 1995 Walk across Europe. LAKA from the Netherlands is writing a comprehensive booklet on the nuclear situation in Europe, both military and civilian. OVE will publish a booklet on energy savings and renewable energy, overview of the situation in Europe.
- Organise official receptions at city halls and parliamentary buildings for when the walkers arrive. Ask them for an official proclamation.
- Invite the local community to walk with us through their town/village/country ... or all the way across Europe. Ask your friends, family, other groups, schools, etc... to join us as we walk through their area. Ask them to make banners, signs, ... and whatever to carry with them. Send a representative of your group or region to join the walk for the whole period.
- Organise non-violent actions or a demonstration. Help the walkers to organise powerful non-violent actions at symbolic places (nuclear power plants, nuclear missile sites, ...) or organise a demonstration in major towns along the route.
- Invite the media to all those events.
- Spread our petition through your network. With YOUR help it should be easy to collect over ONE MILLION SIGNATURES by the end of the walk.

European Bank for Radiation and Destruction
EBRD

gives money to Ignalina NPP, averting its shutdown.

The French nuclear lobby is ready to help.

Vitautas Bieliauskas, head of the nuclear energy division of the Lithuanian Energy Ministry, said that the European Bank for Reconstruction and Development allocated 33 million ECU to upgrade safety at Ignalina. As the nuclear reactors are similar to those used at Chernobyl, they have caused concern about safety in Europe. A French delegation, including nuclear experts, visited the power plant recently and said that companies in France are ready to take an active part in the Lithuanian power plant’s modernization. An agreement was even signed under which the French Nuclear Energy Agency plans to supply Ignalina with technical equipment and training, and to help to establish a supervision and service program for the power plant.

Nevertheless, the French experts said that nuclear plants of this kind should be shut down. But, as they said, they were aware of Lithuania’s economic predicament and of the few possibilities for alternative sources of energy. They did not mention, but they were well aware, that 33 million ECU given by EBRD can be harvested by the French nuclear industry instead of being used to develop alternative solutions in Lithuania like energy efficiency, renewable energy, price regulation etc. See article SEN no. 4 March 1994. Source: Ecodefense

The Sustainable Energy Handbook for NGOs and Local Groups

Finally it is here!

The Sustainable Energy Handbook is based on more than 10 years of experience of the ‘Danish Energy and Environment Offices. The ‘offices’ are run by local NGO groups. They promote renewable energy by lobbying politicians, through information campaigns, and by giving advise and help to citizen groups, individuals, etc., who want to start up a windmill cooperative, are interested in getting a solar collector, want ideas on energy and water saving, etc.

The book gives an introduction to energy planning and analysing of energy systems. Further it describes the state of the art of different energy saving and renewable energy technologies - solar energy (active, passive, photovoltaics), windpower, wave power, and biomass. There are also many examples of how to implement the technologies. Finally the book goes through the roles of the Danish Energy and Environment Offices in this process, and how the offices are organised.

The book has been translated into English, Russian, Czech, Estonian, Polish, and Hungarian. The English and Danish version of the book costs 108 DKK, and is sold by:

OVE, Skovvangsvej 191, 8200 Aarhus N, Denmark Ph: +45-8610 6411, Fax: +45-861 6188

For other Languages contact:
- Czech: EkoWatt, Buberska 6, 170 00 Praha 7, At. Jiri Beranovsky, Ph: +42-2-802910, Fax: +42-2-802906
- Estonian: Energy Center TAASEN, 23A Akademia Road, Tallinn 0026, Att. Tonu Lausmaa, Ph: +372-2-527555, Fax: +372-2-523624, E-mail: Tonu.Lausmaa@win.goodwin.ee
- Hungarian: Reflex, Bartok B. u. 7, 9024 Gyor, Att. Kovacs Karoly, Ph/fax: +36-96-10988
- Russian: Ecoville Foundation, P.O.Box 644, St. Petersburg, Att. Vladimir Shestakov, Ph: +7-812-2710467, Fax: +7-812-1135896, E-mail: vshestak@sovansusovusa.com

Sustainable Energy News - Europe 2 No. 5, June 1994
Energy Charter negotiations update

Since the non-binding (European) Energy Charter was signed in December 1991, there have been negotiations for binding protocols on free trade and investment, environment, and other issues. The negotiations have focussed on a basic protocol, the Charter Treaty, that will create a free energy market throughout all industrialized countries, including the OECD as well as Central and Eastern Europe.

While there is agreement on a weak text for the environmental chapter of the Charter Treaty, there are several unsolved questions still to be negotiated:

- Russia has asked for exceptions for its industry to avoid foreign take-over of the Russian industry during privatization and to allow vital subsidies for its domestic industries. While other countries will allow this to a certain extent, large and long-lasting exceptions will weaken the Treaty too much for some countries;
- Russia has asked for a fixed market share in the EU for uranium fuel for nuclear power plants. This has been opposed by France and other countries that fear for their domestic nuclear fuel production;
- Russia and the USA will not commit themselves to a standstill concerning levies on imports and exports (duties and similar);
- The European Union has asked for exemptions for Regional Economic Integration Organizations (REIO) to be able to keep the preferential treatment agreed in the EU and the Europe agreements with Eastern Europe.

Negotiations are taking place in June. If no breakthrough is reached during this negotiation session, most observers believe that the Charter Treaty will be postponed and that negotiations will continue on a lower level.


TACIS Priorities

The TACIS Program, Technical Assistance for the Commonwealth of Independent States, has been underway since 1991. Initially the program worked on a one-year basis, but a recent decision set up a three-year Indicative Program for 1993-95. The energy got high priority in six of the former Soviet states: Armenia, Azerbaijan, Kyrgyzstan, Moldova, Russia and Ukraine.

(Source: Energy in Demand)

European Bank for Reconstruction and Development (EBRD)

The EBRD recently signed energy loans and grants in Belarus, the Former Yugoslav Republic of Macedonia and Lithuania.

In Belarus, a $45.3 million loan is given to build a 62 MW combined-cycle heat and power plant. In Macedonia, a $27.12 million loan is provided for Macedonia’s Energy Conservation Program, and grants will be available to industrial enterprises for restructuring and privatization. In Lithuania, EBRD will administer a grant of $37.3 million given by the Nuclear Safety Account (NSA) for safety upgrades at the Ignalina nuclear power plant. NSA includes funding from 12 countries and the European Union.

(Source: Energy in Demand)

Effects of Chernobyl in Forests

A joint United Nations Economic Commission for Europe (UN-ECE) and UN Food and Agriculture Organization (FAO) committee warned last December that 4 million hectares of forested areas in Belarus, Russia and Ukraine were heavily contaminated by the April 1986 nuclear accident at Chernobyl. The research shows that forest ecosystems have accumulated more radionuclides than non-forested areas and that the distribution depends on the type of forest and weather conditions. These forest areas can create a secondary contamination of neighbouring territories as well.

(Source: Energy in Demand)

Climate Change: The UK Programme

The UK plans to reduce greenhouse gas emissions by 5% by the year 2000. Some of the measures already announced include value-added tax on domestic heating fuel and increases in road fuel duties. The Energy Trust will help to finance energy conservation measures.

(Source: Energy in Demand)
Stop a Nuke - Have Lots of Fun

Imagine a science fiction movie: an evil Megacorporation from a distant land sells its expensive, dangerous, untested technique for "upgrading" a bad power plant design, on a small, poor planet. The planet's government shares profits from building the plant, so they make sure the media only show its "good side." Almost everyone believes them. But a few rebels spread the real truth...

The "planet" is the Czech Republic, the Megacorporation is the US firm Westinghouse, completing and "upgrading" the Temelin nuclear power plant. The rebels are Hnuti DUHA (the RAINBOW Movement) - us.

Our upcoming action is:
The July Action Camp at Temelin!

You, too, are welcome there, anytime in July, as long or as short as you want. The camp has a serious side: spreading petitions and information, educating area residents about Temelin, and direct actions and "happenings." The more fun side includes workshops and education for the participants - the more foreigners we have, the more likely we'll have some workshops in English. Evenings will include films, slides, art workshops, rock and folk concerts, lectures and more.

There will also be a main action, a time for international participants to come. Ask for more details. It will surely increase the media impact of the action.

Come with instruments, art and cooking supplies, a tent and/or bicycle if you want and of course, a sleeping bag! Also bring 6 ECUs (not ECU) a day for food. No tobacco or alcohol, please.

You can help in another way - if you're ready for a little (not much) sweat: come for at least a week or ten days, and devote yourself to the "Clean Energy Brigades." With this project, we want to dispel the belief, widely held by Czechs, that energy efficiency and conservation are ineffective and worthless. We will directly show rural homeowners how they can save money through energy efficiency - to convince them it's a good idea - good enough to replace a nuke. Volunteers from the Action Camp will provide free labor, and DUHA will provide materials at half price, in order to insulate homes around Temelin. Eastern Europeans coming to work for the Brigades for at least ten days will get a 50% travel reimbursement. If you want to make a difference directly, and have a good time cheaply, join the Energy Brigades!

Erikk Piper, International Coordination, Jakubske nam 7, 60200 Brno, Czech Republic. Tel: +42-5-4221 0438, fax +42-5-4221 0347, Temelin Action Camp, Brno erikk@ecn.gn.apc.org

Lithuanian Energy Saving TV Competition

The Lithuanian INforSE member, Community Atgaja and the Lithuanian Television organized a competition on the best household energy saving designs, implemented in Lithuania. The competition was shown in a weekly programme from January 1 to April 25 in the Lithuanian Television.

Aim of the competition

The purpose of the competition was to increase public understanding on saving energy and on environmental protection problems in the everyday life in households. It was aimed at promotion of environmentally sound and energy-saving technologies to get the public involved and actively participate.

The competition was supported by Lithuanian ministries and by several companies in Lithuania.

Visit to Denmark

The last event of the competition is an educational trip of 25 Lithuanians in Denmark on June 10-17, 1994. The visit is organised by OVE, Danish Organization of Renewable Energy. The Lithuanian competition winners, experts and a TV crew will get acquainted with the Danish experience on the field of energy saving, renewable energy, house building and renovation.

More information: Linas Vainiūnas, Saulius Piksrytis Atgaja, Uosto Kran­tas 3, 3000 Kaunas, Lithuania. Tel: +3-707 208765, Fax: 3 707 209274.

Sustainable Energy News - Europe 4 No. 5, June 1994
increasing federal budget cuts. Each year, as they receive fewer federal dollars, states find themselves having to choose between helping fewer people or giving less meaningful assistance to more. Moreover, with home water and sewer rates increasing due to rising costs of purifying water, America’s poor have a difficult time obtaining all basic necessities.

While there is talk about universal access to the information highway, there is no comparable concept of a universal right to minimum guaranteed service for any utility. Many states do not even have shut-off moratoriums during winter. During the 1990-91 heating season, 1.1 million (40%) low-income households had their heating terminated due to their inability to pay.

**Beyond Environmental Advocacy**

Environmental Action does not believe that environmentalists should be developing solutions that neither adequately protect nor benefit poor people and people of color. By devising proposals and policies with middle-income consumers in mind, environmentalists often actually add to the burdens of the poor, the elderly and others on fixed incomes and the marginally employed. For example, some environmental advocates have crafted a variety of energy taxes and full cost accounting measures which would significantly raise the cost of non-renewable energy and energy-intensive goods and services. While such proposals have an appealing logic because they help foster conservation, they have often failed to consider that such solutions are potentially devastating for low-income people. Environmentalists need to be careful not to create new wrongs through regressive energy taxes or fuel pricing structures.

For the past year, Environmental Action has been working closely with energy and environmental activists and low-income and environmental justice advocates to explore the intersection of energy and equity issues at the state and national levels. The goal of this work is to foster an atmosphere of trust and support such that the public interest community will pursue common solutions and ongoing vehicles for collaboration. Just as environmentalists strive to ensure standing for the voiceless--nature as well as generations not yet born--in this process, so too low-income advocates struggle to provide a forum to poor and disadvantaged people who tend to be left out of public policy debates.

Environmental Action believes that there is a deep commonality of interest and experience between advocates for the environment and advocates for the poor. Not only do we face many of the same challenges, but, in fact, we are ultimately pursuing many of the same solutions, solutions that are based on a hard-edged analysis of the dangers of unbridled corporate power and a commitment to truly participatory democracy and citizen empowerment. The most powerful movements for societal change have all gained strength through their ability to mobilize different segments of a broader community. We believe in crafting a more comprehensive vision— together with poor people—of a just and ecologically sustainable society where all human beings are responsible and accountable to the local community for their actions.

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**Two U.S. Federally-Funded Programs Which Assist Low Income Families With Their Energy Needs**

**Low Income Home Energy Assistance Program**

The Department of Health and Human Services Low Income Home Energy Assistance Program (LIHEAP) is a critical survival program that helps poor people pay their energy bills. LIHEAP was founded as an interim measure to ensure that the burden of rising energy costs associated with the decontrol of oil in the 1970s did not impact low-income people so adversely that they simply could not heat and light their homes. Unfortunately, the need for the program has endured, while LIHEAP program funding (in real dollars) has declined steadily since the early 1980s. At its current levels, LIHEAP funding is estimated to reach only 23 percent of eligible households and pays on average just 20 percent of the residential energy costs of those it serves.

This year, the Clinton administration proposed to cut LIHEAP by 51 percent. This past spring, Environmental Action worked to mobilize the support of national environmental groups for this low-income program. Funding for LIHEAP may be restored by Congress.

**Weatherization Assistance Program**

The Department of Energy’s Weatherization Assistance Program (WAP) helps to make low-income homes more comfortable and energy-efficient. The WAP provides training and jobs for local WAP providers in new technologies and home renovation skills. It reduces energy costs and returns health benefits not measured by traditional cost-benefit tests.

The Oak Ridge National Laboratory (ORNL) recently estimated that in 1989, the WAP reduced space heating usage by 18.6 percent on average and by over 25 percent in many areas with high heating usage. Also in that year, the WAP outperformed comparable private sector energy efficiency programs. Preliminary studies at ORNL suggest significant greenhouse gas emissions reductions as a result of WAP improvements to antiquated heating equipment. This year, solar domestic hot water units will be provided to homes in Florida under a WAP pilot project.

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**Diagram:**

*Distribution of energy burdens: variations in low-income households burdens.*

Small Island Developing States: Global Leaders with Renewable Energy

Small islands have big problems with energy. Diesel and other fossil fuels are shipped over long distances. Kilowatt-hour prices may reach up to 1 USD. And pollution from diesel leakages can be disastrous for the water supply, especially on coral islands. Yet some small island states are global pioneers of renewable energy.

by Rene Karottki and Rasmus Gade, Forum for Energy and Development

UN Conference

The UN Conference on the Sustainable Development of Small Island Developing States, held in Barbados 25th of April to 6th of May, 1994, included energy as one of the items in the Plan of Action. The plan recognizes the special energy problems of the Small Island Developing States (SIDS) and is optimistic about the potential for energy conservation and renewable energy. But when it comes to concrete action, the level of ambition in the text is not very high. The main message is that more resources should be allocated to research and development.

NGO Energy Workshop

The energy workshop at the parallel NGO Islands Forum '94 developed a set of more specific and action-oriented recommendations. They suggest, among other things, energy efficiency standards, environmental standards to be met by all energy generating systems, open access to the power grids for independent power producers, changes by utilities to get a significant part of their energy from renewables, and incentives to use off-grid renewable energy systems.

The recommendations were adopted by the NGOs and included in the overall recommendations of the NGO Forum. Even though they were developed for the islands, most of the principles are applicable to other countries as well.

Technology Bank

The NGO Forum also adopted a continuation resolution that will now be the framework for joint action by the SIDS-NGOs in the Pacific, the Caribbean and the Indian Oceans. One of the concrete proposals is to form a technology bank, a data- and contact base for NGO-expertise in sustainable development. The technology bank will comprise expertise from the islands as well as from other developing and developed countries. This order of priority reflects the fact that access to know-how often is a bottleneck for island countries that are too small to support a full-scale national research and development program.

Nevertheless, some small island states are at the forefront of renewable energy. On several islands in the Pacific states of Cook Islands and Tuvalu, all electricity is supplied from solar energy.

The official energy plan of Cook Islands targets a 100% supply from renewables before the year 2010. This target can be reached through photovoltaics and wind energy.

On Tuvalu, 26% of all rural families are provided with electricity from solar panels. During 1994, this will grow to 50%, equal to 500 household systems. The PV-systems are owned, installed and maintained by a national co-operative for solar power. The end-user pays for the electricity as metered. The co-operative has a technician on every island who is responsible for the operation and the collecting of fees. This form of organization is working well, because there is regular service (once a month) and because the systems are adapted to the needs and economical capability of the individual family.

NGO Recommendations on Energy, NGO Actions.

NGOs must educate, facilitate and advocate energy issues from the people, to the people and for the people to ensure that those affected are fully involved in decision making processes and retain full control over their energy resources and energy systems.

NGOs must give higher priority to cross-sectoral integration of sustainable energy in their on-going and future programs.

NGOs must allocate human and financial resources to:

- Exchange of information and experiences on sustainable energy issues, among Small Island Development States and between SIDS other developing and developed countries.

- Decentralized energy projects with full involvement of local knowledge, the local population (including women) and local enterprises. The projects should educate local people to ensure their long term capability to install, operate and maintain new technologies, and should provide credits for investment in sustainable energy systems.

NGOs must monitor and evaluate both nationally and internationally funded energy projects with respect to environmental concerns, democratization and end-user involvement. (From NGO Islands Forum '94, full text of NGO energy paper available)
Wind in Small Grids

Wind turbines are providing power to small islands such as in Cape Verde, Greece and Brazil. At present, 10-20% of power consumption on these islands comes from wind energy. The turbines are connected to the local diesel-powered grid in a very un-complicated way and are very reliable in operation. The experiences from these projects show that a share of up to 50% wind power can be technically and economically feasible. Such penetration rates can be achieved without entering into very complicated wind/diesel systems, just by applying standard turbines, diesel generators and control systems.

Andros Is Catching the Wind

Andros is the second largest island in the Cyclades' chain in the Aegean Sea. She has 9,020 inhabitants and a total area of 380 km². The annual average wind speed is 8.5 m/sec.

In 1992, the Public Power Corporation (PPC), Athens, installed seven 225 kW wind turbines on the island. Until then all power was generated by the local autonomous diesel station.

The total wind capacity is 1.6 kW. The total load on the island grid varies over the year from 2.2 MW to 6.5 MW.

The wind farm is connected via standard transformers to the utility grid (20 kV) and operated by a Load Management System (LMS) installed at the diesel station 40 kms away from the turbines. The LMS system operates with a pre-set maximum percentage wind power of the total load. Since the commissioning of the wind turbines in 1992, a total of approx. 12% of the power consumption has been supplied by the turbines. In periods of low grid consumption, a wind power percentage of 65% has been achieved without variations in voltage and frequency.

Over 12 months in 1992-93, 1,111 tonnes of diesel fuel were spared by the wind turbines. The project is subsidized by the E.C. with 40%. With this subsidy, the pay-back time is approx. 5 years. The turbines have been operating steadily with an availability time of 95%.

Wind Energy In Cape Verde: Promising Prospects

The island state of Cape Verde has a population of 386,000 and is endowed with good wind resources that now will contribute significantly to the power production on the islands. The annual average wind speed is 9-10 m/sec. Since 1985, two 55 kW wind turbines have been in operation on the Praia power grid on the island of Santiago, erected by the public utilities as part of a UNDP pilot project.

Based on the experiences from the Praia project, a 3x300 kW wind farm will now be installed near Praia. The wind farm will increase the penetration of wind power to 15-20%. The experiences so far indicate that the wind penetration level can grow to 40-50% without using sophisticated control systems.

At the same time, 3 x 300 kW wind turbines will be installed near Mindelo on the island of San Vincente, and 2 x 300 kW turbines near Palmera on the island of Sal.

Cape Verde. Photo: RISO

Seven 225 kW wind turbines operating in the barren landscape of Andros, the second largest of the Cycladic islands. Photo: Vestas

No. 5, June 1994 13 Sustainable Energy News
Sustainable Energy and Social Development

by Shen Chang-Jiang and Qi Wen-hu

In China, most of the natural energies, such as solar, wind, small-scale hydro-power, biomass and geothermal energy, are recognized both as renewable energy and rural energy. Rural energy sources have the greatest potentials, are the least developed, and are widely distributed. At present, they are managed mainly by different agricultural units.

Renewable energy potentials in China

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar radiation</td>
<td>1200 mill. MW</td>
</tr>
<tr>
<td>Wind energy upon ground surface</td>
<td>0.16 mill. MW</td>
</tr>
<tr>
<td>Biomass energy</td>
<td>6850 mill. t/oe/year</td>
</tr>
</tbody>
</table>

Energy consumption in 1991, China

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional energy</td>
<td>1038 mill. t/oe</td>
</tr>
<tr>
<td>Rural energy, excl. biomass</td>
<td>270 mill. t/oe</td>
</tr>
<tr>
<td>Biomass</td>
<td>288 mill. t/oe</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Items</th>
<th>1990</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar cookers (thousand units)</td>
<td>117.9</td>
<td>135.4</td>
</tr>
<tr>
<td>Solar water heaters (thousand m²)</td>
<td>998.7</td>
<td>1557.5</td>
</tr>
<tr>
<td>Solar driers (m³)</td>
<td>7370</td>
<td>7397</td>
</tr>
<tr>
<td>Solar greenhouses (thousand m²)</td>
<td>352</td>
<td>1185</td>
</tr>
<tr>
<td>Solar cells installed (kW)</td>
<td>195.2</td>
<td></td>
</tr>
<tr>
<td>Plastic sheds (thousand ha)</td>
<td>169.95</td>
<td></td>
</tr>
<tr>
<td>Wind-driven generators (thousand units)</td>
<td>106.3</td>
<td>118.8</td>
</tr>
<tr>
<td>- installed capacity (MW)</td>
<td>12.91</td>
<td>16.79</td>
</tr>
<tr>
<td>Wind-driven water pumps (units)</td>
<td>1384</td>
<td>1508</td>
</tr>
<tr>
<td>Irrigated area of farmland by the pumps (ha)</td>
<td>2269</td>
<td>1307</td>
</tr>
<tr>
<td>Small hydroelectric power station (sites)</td>
<td>40279</td>
<td>48082</td>
</tr>
<tr>
<td>- installed capacity (MW)</td>
<td>1179</td>
<td>4786</td>
</tr>
<tr>
<td>Micro hydropower generators (units)</td>
<td>34361</td>
<td>50906</td>
</tr>
<tr>
<td>- installed capacity (MW)</td>
<td>116</td>
<td>215</td>
</tr>
<tr>
<td>Geothermal energy (sites)</td>
<td>674</td>
<td></td>
</tr>
<tr>
<td>Land cultivated with geothermal hot water (in ha)</td>
<td>805</td>
<td></td>
</tr>
<tr>
<td>Aquacultural production with geoth. hot water (ha)</td>
<td>514</td>
<td></td>
</tr>
<tr>
<td>Biomass digesters in rural societies (thousand units)</td>
<td>3381</td>
<td>3216</td>
</tr>
<tr>
<td>Number of rural families using biogas (thousands)</td>
<td>4797</td>
<td>4982</td>
</tr>
<tr>
<td>Output of biogas per year (million m³)</td>
<td>1042.73</td>
<td>1154.8</td>
</tr>
<tr>
<td>Biogas stations (sites)</td>
<td>1593</td>
<td></td>
</tr>
<tr>
<td>- number of families supplied</td>
<td>63939</td>
<td></td>
</tr>
<tr>
<td>Biogas plants (sites)</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>- installed capacity (kW)</td>
<td>2077</td>
<td></td>
</tr>
<tr>
<td>Animal-driven generators (sets)</td>
<td></td>
<td>358</td>
</tr>
<tr>
<td>- installed capacity (kW)</td>
<td></td>
<td>71.7</td>
</tr>
</tbody>
</table>

Social Development and Utilization

The utilization of some sustainable energy sources has a very long history in China. For example, wind and geothermal energies were used already thousands of years ago. But modern development was mainly started in the 1950's, especially in the areas of solar energy, wind energy, biomass energy, and tidal energy.

In 1992, 109 scientific research institutions and 16,000 extension teams were working with sustainable energy. These extension teams employ 111,200 people (Chinese Ministry of Agriculture).

Biogas energy is the most important of the sustainable energies in China's rural society. It is used not only for domestic tasks, e.g. cooking, heating and light, but also for various production activities. The biogas residue and liquid are good organic manure for plant production, fish-ponds, and mushroom production; in addition, they are used to feed pigs.

Use of biogas is very developed in the provinces of Sichuan, Jiangsu and Zhejiang, which have 62% of China's biogas digesters.

Small-scale hydropower is most developed in the provinces of Guangdong, Hunan, Sichuan and Fujian, which have 60% of the installed capacity in China.

Model BD-102 wave-activated generating device is working on the navigation channel outside the estuary of Pearl River.
Solar energy is mainly distributed in Gansu, Qinghai and Hebei provinces, which, for example, have 89% of the Chinese solar cookers. Photovoltaics is only in use in Inner Mongolia, in Xinjiang, and in Gansu, where the first Chinese PV plant was built in 1985.

Wind generators are mainly used in Inner Mongolia, which has 78% of the installed capacity of the whole country. Wind-driven water pumps are mainly distributed in the Hebei province.

Animal-driven electric generators are developed in Shanxi, Qinghai and Inner Mongolia. The average installed capacity of one generator is only 200 Watts, but it is a useful way to collect the sustainable energy from animal power.

**Technical Achievements**

China has achieved a lot in development of sustainable energy technologies.

The wind industry of China can produce wind generators from hundreds of watts to tens of thousands of watts. There are 12 wind power plants and 6 wind power test stations in China. Xinjiang Test Station is the biggest. It has 13 wind turbines of 150 kW each, as well as units of 100 kW and 55 kW. It was built through collaboration between the Danish and the Chinese governments and was completed in 1989.

Several tidal and geothermal power stations are in use in China. There are 7 tidal power stations and one flood-tide power station in operation with a total capacity of 11 MW. The largest is the Xingfuyang plant in Fujian, with a capacity of 1.28 MW. There are about 9 geothermal power plants; the biggest is in Tibet, near Lhasa. In 1989, this plant had an installed capacity of 19 MW, and it plays a key role in the power supply of the Lhasa area. The geothermal energy is also used directly for greenhouses, fish-farming, space heating, public baths, egg hatcheries, and for industrial processes, such as tannin extraction, drying, dyeing, and paper production.

In recent years, great efforts have been made to develop amorphous silicon solar cells, wind power heaters, biomass diesel production, sorghum-based alcohol fuel, energy recovery from urban waste, wave power, technologies for hydrogen production and storage, etc.

**Policy and prospect**

The policies and prospects for development of sustainable energy in China are based on the needs for energy supplies and environmental protection. Since the 1970’s, China has paid much attention to R&D of these energies, especially rural energy development. At the national level, attention is given to pooling resources from departments of the central government for support to R&D in priority areas, while international cooperation should also be strengthened to supplement national efforts. At the local level, priority should be given to demonstration projects and experiments for developing such energies, as well as to development of pilot industrial enterprises. These purposes should be given preferential treatment in the local financial policy.

China’s rapidly growing coal consumption will make China the largest CO2 emitter if present growth rates continue for another decade. Its coal consumption is the largest in total, but its emissions are still smaller per capita than those of industrialized countries.

**China’s Food Production Vulnerable to Climate Change**

According to the assessment of IPCC, global mean temperature will increase by 1 C by the year 2030 with present trends of energy consumption and CO2 emissions. It is projected that the middle latitudes, where the major part of Chinese rice is grown, will be drier. The rainfall might decrease by 10-20%. This will reduce Chinese rice production, which comprises 70% of Chinese grain production, by at least 10-20%. The potential for higher grain and bean production in Northern China, in the event of climatic warming, cannot compensate for the reductions in rice production. Drought, the major disaster for food production in China, will also become more frequent and serious.

Source: Jibin Luo, Meteorological Administration of China, Beijing; presentation at Global Climate Change Conference, Phoenix, Arizona, USA, April 4-9, 1994.
At present, the energy shortage is not only a problem in some big cities in China, but also is serious in some rural regions. According to a rough estimate (Hu, 1991) about 80 million households lack domestic fuels for 50 days every year. Another estimation is that half of the rural families in China have a shortage of one-third of their domestic energy needs. The problems are largest in Hebei, Henan, Shandong, Sichuan, Hubei, Gansu, Xinjiang and Tibet (Chen et al., 1991). Therefore, the guidelines for rural energy development should be in accordance with the requirements of integrated and efficient use of various energy sources. Similarly, energy efficiency measures, also for conventional energy, should be adopted.

The Chinese scientists and technicians are ready to work together with the people of the world, particularly with the people of developing countries, to alleviate the conditions of energy shortage, environmental deterioration, and the ecosystems imbalance in the future.

This article has been shortened by the editors. The full article is available from Qi Wen-hu, CISNAR, 11 Nongzhanguan Nanli, Beijing 10026, China. Ph: +86-1-491 7296, fax: +86-1-491 4230.
The formation of the consortium is the result of a conference on co-operation among international energy centres arranged by Folkecenter for Renewable Energy with financial support from Forum for Energy and Development.

The object of GREECA is to promote renewable energy and ecology through exchange of experts, transfer of technology, training, demonstration, exchange of information, and evaluation.

The 5 participating centers are as follows:
- AFPRO
- Action for Food Production, New Delhi, India
- BRTC
- Asia-Pacific Regional Biogas Research and Training Centre, Chengdu, China
- CAMARTEC
- Centre for Agricultural Mechanization and Rural Technology, Arusha, Tanzania
- CIES
- Centro de Investigaciones de Energia Solar, Santiago de Cuba, Cuba
- FC
- Folkecenter for Renewable Energy, Hurup Thy, Denmark.

Integrated Sustainable Energy Programme
Establishment of renewable energy technologies in the rural districts of India for water pumping, lighting, and processing of crops. The programmes will be carried out in 2 phases: A pilot phase of 2 years and a follow-up phase of 3 years, 5 years in all. This is a co-operative programme between Folkecenter and AFPRO. The amount of the programme: 12 mill. DKK.

Solar Energy Technology for Rural Areas in Tanzania
A co-operative project between Folkecenter and CAMARTEC to develop rural districts in Tanzania through establishment of solar energy and biogas plants in 20 rural districts. Project period is 3 years. The amount of the programme: 3 mill. DKK.

Renewable Energy and Sustainable Development in Cuba
Co-operative project between GREECA and CIES to establish 16 different solar, biomass, and wind energy systems in the rural districts. Local entrepreneurs and authorities are to be involved. Project period is 5 years: A pilot phase of 2 years and a follow-up phase of 3 years. The amount of the programme: 18 mill. DKK.

The programme of GREECA is aimed at the poorest districts, which are the rural districts, and combines the comprehensive knowledge and experience of the 5 centers within the field of renewable energy with broad and close knowledge of the local conditions. Objectives of the strategy include partnership and co-operation among research institutions as well as increased influence from the recipient countries. These changes will help projects to succeed and to survive.
New UN Committee on Renewable Energy

In February, 1994, the UN Committee on New and Renewable Energy and on Energy for Development held its first session. It is an expert committee that is giving advice to ECOSOC (the UN Economic and Social Council). It follows up on some of the work of the UN Committee on New and Renewable Sources of Energy and the UN Solar Energy Group for Environment and Development (UNSEGED). During its first session, it elaborated a resolution that will be discussed in ECOSOC in the coming July. In this resolution it calls for renewed action for renewable energy from countries as well as from the bodies of UN. The proposed resolution follows many of the recommendations from the UNSEGED report of 1992. It proposes a number of necessary actions; but not with a strong wording:

- it invites the countries to take steps to have external costs reflected in the decision-making processes, but it does not mention CO2/energy taxes;
- it recommends development and strengthening of institutions for international cooperation in the energy sector for sustainable development, but it does not mention an international sustainable energy agency as proposed by UNSEGED and many NGOs.

In the proposed resolution, there are a number of proposals for the UN organizations; these can change the UN system into a really supporting factor for sustainable energy, if approved by ECOSOC and implemented.

At the Committee’s first session, there were 16 experts as well as 13 country observers, 8 observers from UN organizations, and 4 NGO observers. The following meeting is planned for February/March 1995 to provide the UN Commission on Sustainable Development with input on the issue of energy for rural development. It will be open to NGOs with consultative status in the UN, Gunnar Olsen, INforSE, based on information from C. Constantinou, Energy and Natural Resource Branch, Division of Sustainable Development, UN Department of Policy Coordination and Sustainable Development, New York, USA. Fax: +1-212-963 1995.

Publications

Who is Who

Household Energy Initiatives for a Sustainable Energy Future

The NGO Alternative Treaties and the NGO Treaty Process

Climate Change and the Insurance Industry

The Climate Change Action Plan
USA President Clinton, Vice President Albert Gore, Jr. White House, Washington D.C. USA. 55p, 1993

Wired Up to the Sun, A Guide to the Photovoltaic Revolution

The Solar Electric House
S.J. Strong, 288p, USD 16.95, 1993

The Independent Home, Living Well with Power from the Sun, Wind and Water
M. Potts, 320p, USD 17.95, 1993

Clive Brookes, P.O. Box 130, Route 113, Post Mills, Vermont 05058 USA. fax: +1-802-333 9092.

Life-Cycle Analysis of Energy Systems

Eco-Renovation: The ecological home improvement Guide
Edward Harlak, A Resurgence Book, 256 pages, pound 9.95, 1993

Renewable Energy

The PowerGuide, An international catalogue of small-scale energy equipment

Windpumps, A guide for development workers

The Impact of Climate Change
UNEP/GEMS Environment Library, P.O. Box 30552, Nairobi, Kenya. 1993

All of Us, Environmental Education Dossiers
Free newsletter. Edited in English, French, Spanish and Catalan, Centre UNESCO de Catalunya, Mallorca 285, 08037 Barcelona, Spain.
Events

* INforSE Campaign activities

June 28-29, 1994
Regional INforSE meeting for Latin America, Rio de Janeiro, Brazil

July, 1994
Clean Energy Brigades, Czech Rep.

July 4-8, 1994* European NGO Energy Seminar, Deister, Germany

July 9, 1994
Regional INforSE Meeting for Europe, Deister, Germany
Info: Gunnar Boye Olsen, OVE, Ph: +45-3142 9091, fax: +45-3142 9095.

July 12-15, 1994
2nd World Conference on Solar Cookers: Use & Technology, Costa Rica
Info: Seccion de Energia Solar, Univ. Nacional, P.O. Box 728, Heredia, Costa Rica. Fax: -506-374111.

July 20-August 3, 1994
Bike demonstration for 400 young people to promote an alternative environment, Belgium, the Netherlands, Germany.

August 1-21, 1994
Ecotopia, Romania

August 8-10, 1994
International Symposium on Global Change in Asia and the Pacific Regions, Beijing, China.
Info: c/o LASG, Inst. of Atmosphere Physics, Chinese Academy of Sciences, P.O.Box 2718, Beijing 100080. Ph: +86-1-2560171, fax: -1-2562347.

August 22- Sept 2, 1994
UN, PrepCom, World Summit for Social Development, New York

September 7-9, 1994
North Sun, Scotland

September 11-16, 1994
World Renewable Energy Congress, Reading, UK

September 22-23, 1994
Asia Energy Efficiency Conference & ENEX-Asia '94, Singapore

September 26-27, 1994
Environmental Protection in Developing Countries, Pakistan

October 1-5, 1994
Parallel activities to IMF/World Bank meeting, Madrid, Spain

October 3-5, 1994
8th European Conference on Biomass for Energy, Environment, Agriculture and Industry; Vienna
Info: Dr Chartier, ADEME. Fax: +33-1-46455236.

October 24-27, 1994
Third International Conference on Power Quality, Amsterdam, NL

October 24-28, 1994
III International Conference "Down to Earth", Costa Rica

November 1-3, 1994
Info: Dr Little, SRC Int. Ph: +1-212-6673114, Fax: +1-212-6675593.

November 8-10, 1994
Energy Efficiency Business Week '94, Prague, Czech Republic

November 15-17, 1994
ENEF '94, Future Perspectives for Energy Efficiency in Slovakia
Info: Mr. Rutsek, EMES Ltd. P.O.Box 135, Partizanska 94, 974 01 Banska Bystrica, Slovakia. Ph/fax: +42-88-745183.

December, 1994*
The Other European Summit, Essen, Germany

December 5-9, 1994
First World Conference on Photovoltaic Energy Conversion, Hawaii

January 12-October 12, 1995
Walk Across Europe for a Nuclear-Free World 1995
Info: For Mother Earth, Rosanne Mitchell, Zilverhof 19, 9000 Gent, Belgium. Ph: +32-9-2333268, fax: -23349 24, e-mail: motherearth@gn.apc.org.

March 6-12, 1995
UN, World Summit for Social Development, Copenhagen, Denmark.

March 6-12, 1995*
Global Forum '95, Copenhagen
Parallel to the WS for Social Dev.

March, 1995*
NGO Climate Conference, Berlin
Leading up to the COP1. Info: CNE, 46 rue de Taciturne, B-1040 Brussels.
Ph/fax: +32-2-2310180.

April, 1995
The Climate is Right for A Change, Berlin
Youth conference and actions parallel to the COP1. Info: EYFA or A SEED, P.O. Box 62066, NL-1090 AB Amsterdam.
Ph/fax: +31-20-665-7743/0166.
Sustainable Energy Contacts for the INforSE contact list

Name of organization:

English translation:

Address:

Country:

Ph:

Contact person(s):

Status of organization:   non-governmental   governmental   research   business
                     international   national   local

Short Description:

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Ph: +45-86106411, fax: +45-86106188, e-mail: inforse@pns.apc.org

Contact List

In the next issue of Sustainable Energy News, we will bring a list of sustainable energy contacts from all the INforSE regions, excl. Europe.

If you know about any non-governmental organizations, official bodies, research groups, etc., which is working with renewable energy and/or energy efficiency/savings, we would like to receive information about them.

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