



# DSM *spotlight*

July 2000

The Newsletter of the International Energy Agency Demand-Side Management Programme

## The Impact of Liberalization on Municipal Energy Companies

The restructuring of the electricity sector is having a profound effect on many national energy industries as they try to learn the new rules of the game. To help local government energy authorities play an active part in the changing markets, the IEA DSM Programme has initiated a new Task on municipalities in a liberalized system. Recognizing that the municipalities in each country have different obligations and opportunities in the energy sector, this new Task will investigate how the roles of

local authorities are affected by a liberalized market and then prepare guidelines for improving the local authorities' service delivery in the field.

Germany provides a case-in-point of the scale of the impacts that need to be dealt with. At first, the impact of Germany's liberalized electricity market was relatively mild

despite their taking action before the European Directive. However, this changed once the government decided to let market forces operate with very little regulation and no government guidance on costs for electricity transmission. This laissez-faire approach meant high transmission costs between different regional energy companies and made it prohibitively expensive to buy electricity from a competing electric company. Thus, local companies maintained an effective monopoly.

Then in July 1999 everything changed. The regional energy companies responsible for the transmission of energy, under pressure from the government to reduce the very high-energy prices, agreed on a cheaper and clearer tariff structure for transmission. The result, the start of serious competi-

tion – large companies tried to tempt clients away from their local supplier and electricity began to be sold as a supermarket commodity. With the change in the transmission tariff structure, electricity prices fell dramatically – around 20-30% for both industrial and small consumers. And, profits on the sale of electricity collapsed.

In Germany, almost every town has a municipal company, or Stadtwerke. The Stadtwerke, which distribute and sell about 27% of the country's electricity, took these market changes very seriously as did the municipal owners.

One reason for their concern was that their profits from the sale of electricity are used to subsidize other services carried out by the municipalities, such as public transportation. The legendary efficiency of German public transportation is not only a product of the German love of organisation, it is the product of a cross-subsidy whereby public transportation losses can be off set against energy company profits to reduce corporate taxes. These subsidies also support energy efficiency activities. For example, many German cities have installed district heating systems supplied with combined heat and power (CHP) units, but with the falling price of electricity the profitability of CHP was put into question. Also, many cities run public awareness programs on the subsidies available for solar thermal units, photovoltaics, insulation, and energy efficient appliances, with the profits from energy sales. Programs such as these have been threatened or completely abandoned by towns.

Local German authorities have reacted with determination to these changes, which has resulted in many public awareness programs and energy management activities being supported using local authority funds, however, this cannot continue for-

### COUNTRIES PARTICIPATING IN THE IEA DSM PROGRAMME

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### IEA DSM PROGRAMME MISSION

To promote energy efficiency and DSM for global sustainable development and for business opportunities.

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# Innovative EE Technologies Enter the Marketplace

IEA DSM experts recently completed work in Task III, *Cooperative Procurement of Innovative Technologies for Demand-Side Management*. This multi-year project not only generated important research results, but also energy efficient products.

Over a period of five years, Task experts developed a cooperative procurement process and then implemented it. As a result of this international cooperation three new products were developed and commercialized – a clothes dryer, two high-efficiency motors and a paper copier. As the Task's Operating Agent, Hans Westling, notes "the work of the Task experts has inspired industry manufacturers to accelerate the development and introduction of much more energy efficient products."

The main goal of this Task was to stimulate and facilitate international procurement collaboration. Although several energy-efficient products were developed as a result of this Task, the primary aim of the work was to learn how to conduct effective procurements.

## Lessons Learned

Highlighted below are several of the many lessons that have been learned in this Task. A complete list is available in the proceedings from the workshop, "Accelerate Innovation and Market Transformation of Energy-Efficient Products" held February 1999 in London.

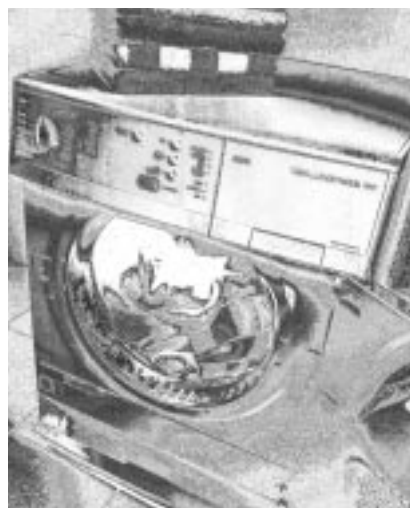
- Innovation is often a circular or spiral process rather than a linear process. Technology procurement is an important mechanism to promote innovation.
- Technology procurement is a long-term dynamic process in which the measures and actions vary with time. Long-term commitment is required from the participants and a high-level of support from the organizations involved. It is necessary to under-

stand the market as a whole, as not only are the technology aspects important, but also the marketing and cost aspects.

- It is important to make policy makers as well as manufacturers and buyers aware of the technology procurement method.

## Results

Through the implementation of this cooperative procurement process, three new products received the IEA DSM Award of Excellence and are commercially available. Several others are in the process of development. The first energy-efficient product resulting from this work was the German AEG clothes dryer. This machine uses a heat pump to achieve a 50% reduction in energy use compared to earlier models. The dryer is available in Germany, the



Netherlands and Sweden, and plans are underway to market the dryer in other European countries. The machine has the distinction of receiving the first EU Energy Class A Label.

Another product resulting from this Task is a high-efficient electric motor. The competition required the development of an electric motor that would cut losses by 20-40% compared to an average comparable motor.

You can learn more about the work of this Task from the following reports. Please visit the IEA DSM web site for more information or to order reports <dsm.iea.org>.

Cooperative Procurement of Innovative Technologies

- *Cooperative Procurement. Market Acceptance for Innovative Energy-Efficient Technologies*, January 1996. NUTEK/IEA, H. Westling.

- *The Challenge*. (brochure), March 1997.

- *Workshop Proceedings, "Accelerate Innovation and Market Transformation of Energy-Efficient Products"*, London, U.K., February 1999.

The efficiency of the two winning motors developed by ABB Motors went beyond expectations. The 5.5W motor reached an efficiency of 90.5% and the 75kW motor reached a 96% efficiency rate.

The third innovative energy-efficient product developed was a "copier of the future." The Rioch Company, Ltd.'s new copier is a network capable, mid-speed digital photocopier that consumes less than 10 watts of energy in standby mode. In combination with its other features, this machine consumes 70% less energy than comparable copiers on the market. The copier is being marketed in the United States and several European countries.

Due to the success of this Task, work in the area of LED traffic lights and copiers will be continued under the new DSM Task, *International Collaboration on Market Transformation, Task VII*.

# Work Focused on Changing Electricity Businesses Concludes

As restructured and competitive electricity industries began to emerge, the IEA DSM Programme initiated Task VI, *Mechanisms for Promoting DSM and Energy Efficiency in Changing Electricity Businesses*, to meet the growing need for information. The goal of this Task was to develop a database of information that could be used by decision-makers who wanted to promote the application and use of DSM and energy efficiency in restructured electricity industries and competitive electricity markets. To accomplish this objective, experts focused on DSM and energy efficiency mechanisms rather than on programs.

Mechanisms, as defined in this project, are initiatives that aim to overcome policy and program barriers that prevent cost-effective DSM and energy efficiency activities. Mechanisms are used to assist the implementation of programs, and are targeted at the organizations that develop and implement DSM and energy efficiency programs.

Task expert began their work by identifying existing mechanisms in the 11 participating countries. As a result of this work, details of over 100 mechanisms for promoting DSM and energy efficiency were recorded in a database. The experts then examined the public policy implications of these mechanisms, and based on this and other information, they identified 25 mechanisms for further development.

## Results

After three years of work, the Task experts produced a comprehensive catalogue of information on incorporating DSM and energy efficiency into restructured electricity industries. This includes the identification and review of mechanisms that should be developed further, for example:

**Control Mechanisms**, such as mandatory sourcing of energy efficiency, energy efficiency license conditions for electricity, and integrated resource planning.

**Funding Mechanisms**, such as public benefits charge for energy efficiency and financing of energy efficiency by electricity businesses.

**Support Mechanisms**, such as sustainable energy training schemes for practitioners, energy centers, and creating entrepreneurial energy organizations.

**Market Mechanisms**, such as taxes on energy, tax exemptions and incentives for energy efficiency, and providing consumption information on customers' electricity bills.

The results from this Task have been documented in five reports and presented at three practitioners workshops held in 1999 in Australia, France and Japan. These products states the Task Operating Agent, David Crossley, are of "... immediate practical use to government policy makers, industry regulators, electricity business managers, and analysts and commentators on the electricity industry." The written reports from this Task have been widely disseminated in the eleven participating countries, and will be available to the public in July 2001.

## Mechanisms for Promoting DSM and Energy Efficiency in Changing Electricity Businesses

Please note, the reports from Task VI will be available to the public in July 2001.

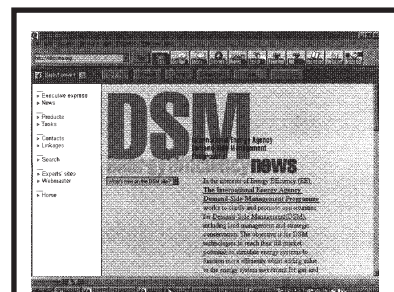
■ *Status of Commercial Mechanisms for Energy Efficiency in Use or Contemplated by US Utilities*, March 1998.

■ *Activities in the Development of Mechanisms for Promoting DSM and Energy Efficiency in non-IEA Countries*, March 1998.

■ *Existing Mechanisms for Promoting DSM and Energy Efficiency in Selected Countries*, November 1998.

■ *Public Policy Implications of Mechanisms for Promoting Energy Efficiency and Load Management in Changing Electricity Businesses*, May 1999.

■ *Development of Mechanisms for Promoting DSM and Energy Efficiency in Changing Electricity Businesses*, August 2000.



<http://dsm.iea.org>

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## Liberalization *from page 1*

ever. In Saarbrücken, for example, programs to promote energy efficiency, CHP and district heating, solar energy (photo-voltaic and thermal) and fuel cell powered CHP are all run by the Stadtwerke, actively supported by the local authority. Jürgen Lottermoser, Director of Energy Services in Saarbrücken City Council, remarked on the problems that have arisen:

"We have run a series of programs over the years: CFL lamps, installation of more efficient district heating or gas fired central heating, purchase of energy efficient domestic appliances (e.g., refrigerators and washing machines) and low interest loans for improving insulation. Now the fall in the electricity prices threaten to completely erase the DM 32M (USD16M) profit that the Stadtwerke made in 1998, and the town is seeking a major energy company to partner with. Other German companies have already been bought out. For instance, Baden-Württemberg Energy has been bought by Energie de France. Stadtwerke Saarbrücken's new partner will not be locally based and there is no assurance at all that the new partner will continue with these non-profit making programs. It is all very worrying."

Mr. Lottermoser did note, "However by contrast, new legislation was passed in February 2000 relating to renewables. This legislation will maintain support by guaranteeing incentive prices and charging the additional cost of the electricity to the transmission/distribution network. This has been a resounding success: the national capacity of photovoltaics has increased from 50MW to 80MW in two months! Similar legislation is now planned to promote combined heat and power, but has yet to be proposed for energy efficiency."

The challenge for municipal companies is not unique to Germany as these companies also play significant roles in other countries. Both Finland and Sweden have numerous municipal companies. And, in

Denmark and the Netherlands there are large regional and sub-regional companies owned by local authorities (although Dutch companies have recently been privatized). Even in France, the most centralized of countries, 5% of the electricity is distributed by municipal companies. If electricity prices fall dramatically, all stand to lose not only money for their energy efficiency programs, but more importantly, particularly in the eyes of their elected members, money for their general local authority budgets.

It is similar in other countries. In Sweden, there is only a slight difference between the most expensive and cheapest supplier. And, in Britain, you can literally buy your own brand of electricity in the supermarket. In New Zealand, where liberalization has taken place progressively since 1987, the manager of one municipal company commented that there is one overriding factor when people choose an electricity supplier—price. This means that all the suppliers have to charge about the same or get out of the market. Small suppliers are finding it hard going and they are pushing to merge with larger conglomerates. This trend, already seen in Sweden and Germany, is creating leviathans able to compete on the international stage. In this battle, energy efficiency will have to compete on its own economic rather than environmental merits.

Although there has been little profit in sales, profit in distribution remains, as it is a monopoly. In 1998, the British company Hyder was making a profit margin of 40% on distribution but only 2% on electricity sales. But profits like these were not able to continue without the regulator imposing major cuts on its network charges. This

points out the challenges for regulated monopoly businesses, with little profit to be made on electricity sales or distribution, there is no obvious funding source to support energy efficiency. So where can profits be earned?

The answer is "services" because they are not regulated and utilities have the advantage of knowing their client base. Therefore, those energy efficiency services that are inherently profitable, that is for the large or affluent consumer, should get a shot in the arm from liberalization. Where the problem arises with public interest services, such as energy efficiency, is for the small consumer. These will disappear unless someone, for instance the local authority, decides to foot the bill.

This is perhaps the most intractable problem facing liberalization. And, this is what the experts of the DSM Task, *Municipalities and Energy Efficiency in a Liberalized Market* plan to address. To date, three countries are participating countries, France, the Netherlands and Sweden, and four more are considering participation. In three years, the participants hope to be able to advise municipalities on how to react to this challenge and what structures will allow local authorities to play a positive role in the competitive energy market.

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*The DSM Spotlight is published four times a year to keep readers abreast of recent results of the IEA Demand-Side Management Programme and of related DSM issues. The viewpoints or policies expressed in this newsletter do not necessarily reflect those of the International Energy Agency, the IEA Demand-Side Management Programme member countries, or the participating researchers.*

*For more information on the Programme, its work and contact addresses, please visit our web site at <http://dsm.iea.org>*

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