Intracting

STUTTGART (Germany)

For many years, budgetary constraints have prevented numerous local administrations from undertaking effective and necessary energy conservation investments. Individual local authority departments have often been unable to implement measures themselves. The city of Stuttgart has developed a new financing system termed 'Intracting'. This takes up the idea of contracting but operates entirely with city administration budget funds. It has done so since 1995, with growing success.

THE CITY

Stuttgart is the capital city of the German regional state (Land) of Baden-Württemberg; the regional state, located in the south-west of Germany, was founded in 1952. The city lies in a wide basin formed where the Nesenbach and Neckar rivers meet. With some 600,000 inhabitants, Stuttgart is the heart of the middle Neckar region, one of the most heavily industrialized regions of Germany (e.g. with the Mercedes-Benz and Porsche car works). It alone provides some 440,000 jobs, the wider region providing 1.3 million.

After Budapest, Stuttgart is the European city most rich in mineral water. Stuttgart has devoted memorials to its more famous citizens, such as the philosopher Hegel and engine inventor Gottlieb Daimler. The city has two universities, numerous technical colleges and the Stuttgart Institute of Management and Technology (SIMT).

CONTEXT

As early as 1976, the city of Stuttgart started to perform energy management tasks and elaborated concrete measures for efficient energy use. The energy crisis triggered the establishment of an energy management unit within the administration, which was charged with providing energy management services for the city. This unit has been a part of the Environment Department since 1988. The key energy management tool is the evaluation and monitoring of the energy consumption of city facilities. Indexes for electricity, heat and water are calculated once a year for all 2,000 facilities owned by the city. A specific software tool – the Stuttgart Energy Controlling System – is used for continuous monitoring of the heating energy consumption of 158 facilities and of the electricity consumption of approx. 150 facilities.

The Stuttgart energy advice centre (Energieberatungszentrum Stuttgart e.V. – EBZ) was founded in 1999 with the financial support of the European Union (through its SAVE Programme: Creation of energy management agencies). The EBZ provides information to building owners, tenants, crafts enterprises and planners on all questions relating to remedial energy conservation measures in the building stock. A grant programme operated by the city creates targeted financial incentives for citizens willing to upgrade their buildings.

Furthermore, environmentally sound transport concepts have been promoted for years at the policy level in Stuttgart. No one in Stuttgart is dependent upon cars: The rail and bus services are punctual, rapid and comfortable. A mobility advice centre set up specially for this purpose provides information on public transport services and on car sharing.

EXPERIENCE IN STUTTGART

City energy management

The Energy Management Department now has 3 divisions with a total of 12 staff, including 5 master craftsmen and technicians and 6 engineers. It is responsible for energy efficiency in 2,000 city facilities. These facilities include kindergartens, schools and administrative buildings as well as indoor and outdoor swimming pools, hospitals and sewage plants. Each of the staff in the energy service administers between 20 and 65 facilities, depending upon their size and complexity. Through numerous on-site visits, the energy service staff gain intimate knowledge of their facilities and are thus frequently in a position to propose technical improvements. The energy bill of the city (for electricity, heating energy and water) figured Euro 35 million in the year 2000.

The problem

In many municipalities, budgetary constraints have been preventing the performance of effective and necessary energy conservation investments for several years now. In the past, in many cases the individual local authority departments have not been in a position to implement proposed improvements. Departments have rather focused upon user satisfaction, attractiveness or image. Thus often only small measures could be realized within the context of ongoing building maintenance. In many cases, measures of budgetary relevance could only be implemented with several years delay or not at all.

Moreover, in the past the individual department derived no benefit from saving energy. Energy funds not consumed could not be channelled to other purposes. Often the dilemma also arose that the property budget had to provide the investment finance for larger measures, while it was the administrative budget which benefited over the long term from the lower energy costs.

A need was thus perceived to create a financing system which permitted the short-term implementation of cost-effective energy conservation measures.

Internal contracting among city departments

In 1995 the Energy Management Department introduced the ‘internal contracting (intracting)’ model together with the City Treasury. This financing system takes up the idea of contracting, but operates exclusively with the budgetary funds of the city. Investments are financed by the Environment Department from a special budget item, to which the energy cost savings are later returned. Consequently, such an item can be set up for a limited term. Over time, the budget item is replenished from ongoing savings, so that, after an initial start-up phase, further funds can be made available for new intracting measures. The Environment Department thus grants an earmarked, interest-free loan to the host department. No mark-up for business risk and profit or for interest on capital deployed is incurred.

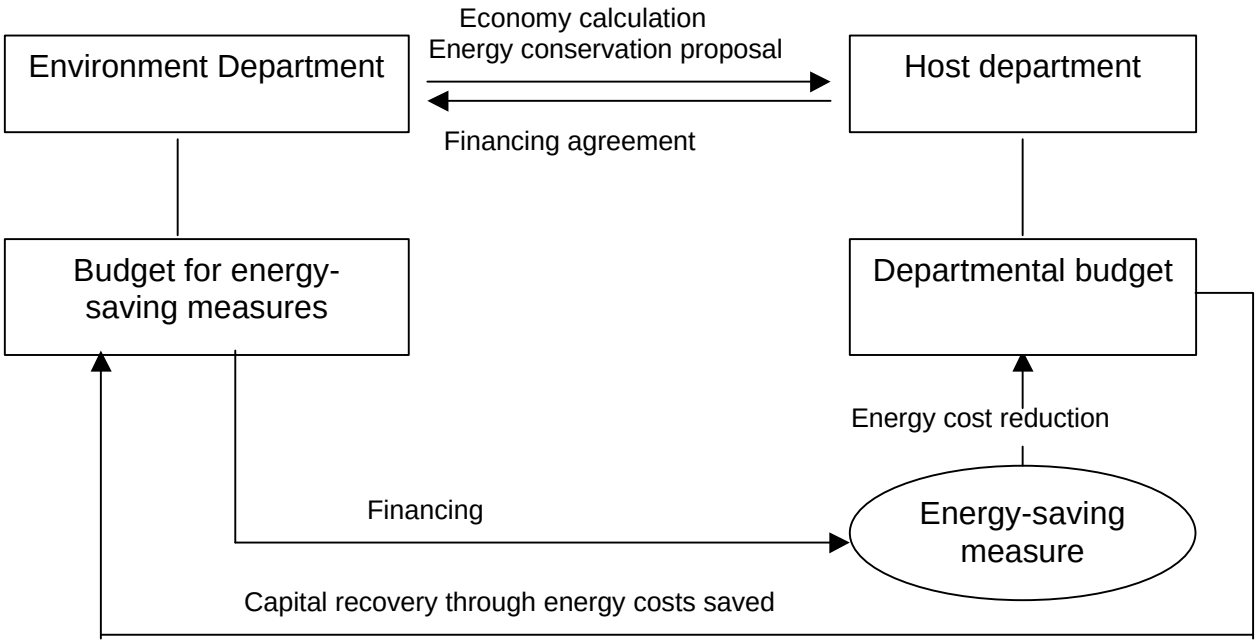
An intracting arrangement thus also involves different responsibilities and duties. While in a contracting arrangement it is expected that the external contractor makes the innovative energy- and cost-saving proposals, this service, too, must be provided by the city departments. The investment costs actually incurred can be assessed exactly within the city administration. Part-financing is also possible, for instance for facade insulation or boiler replacement.

The Energy Management Department adopts the role of contractor vis-à-vis the host administration, and is responsible for analysis, forecasting and monitoring. It is important in this context that only the engineering services associated with planning are provided by the Energy Management Department. As in other types of building work, the city’s Construction Department awards contracts for work after calls for tenders to efficient and competent companies.

This form of financing promotes the willingness of the departments involved to take responsibility. The Energy Management Department has responsibility for the measure in question. A painstaking analysis of the potential energy savings and an economic evaluation based upon the costs identified by the Construction Department are essential in order to actually realize the forecast energy cost savings. It is thus clear that such a financing system can only function if the administration commands over expertise independent of the host departments.

Organization of intracting arrangements
A measure is proposed by the Energy Management Department, the Construction Department or the host department. The Energy Management Department identifies the potential energy cost savings, and appraises the cost-effectiveness of the measure upon the basis of the approximate cost assessment provided by the Construction Department. If this appraisal finds the capital recovery period to be promising, the Construction Department specifies the costs.

This is followed by a detailed economy calculation. If good cost-effectiveness is confirmed, the host department and the Environment Department conclude an agreement. In this agreement, the measure to be performed is specified, the costs are set out and the potential energy savings are calculated. The agreement further determines whether financing is to be provided exclusively from the funds of the Environment Department or whether part-financing is agreed. Measures involving the replacement of existing equipment / systems will always only receive part-financing. When a heating boiler or a lighting system is replaced, this is firstly a building maintenance measure and only secondly an energy conservation measure. The following figure gives a schematic overview of the structure of a financing arrangement.



Structure of the financing model of the city of Stuttgart (source: Stuttgart city administration)

In intracting arrangements, the contract partners of the Environment Department are the local authority departments and autonomous undertakings (Eigenbetriebe) which administer their own buildings. These have included until now the Schools Department, Culture Department, Civil Engineering Department (street lighting), Central Administration, Sports Department, the undertakings running healthcare and swimming facilities, hospitals and the autonomous undertaking of the city which runs homes for the elderly. The Construction Department is not a party to the agreements, but implements the measures. As in all other construction measures, the Construction Department is commissioned by the department which administers the building in question. The technical aspects of implementation are coordinated with the Energy Management Department.

Where the cost-benefit ratio makes it appropriate, meters are used to verify energy savings. Otherwise the potential savings are verified by means of calculation. In the latter case, the level of capital recovery is already stipulated in the financing agreement.

Any special operating modes are also stipulated. In order to give the host department an additional incentive, capital recovery can be limited at 80% of the energy cost savings. In this case, the host department already gains financial benefits in the first year after implementation of the measure; the duration of the agreement is extended accordingly. In such arrangements, the economy calculation is an annex to the agreement.

Capital recovery begins from the first year after implementation of the measure. It ends when the funds deployed have been repaid without interest. From the funds thus returned, further projects can then be financed.

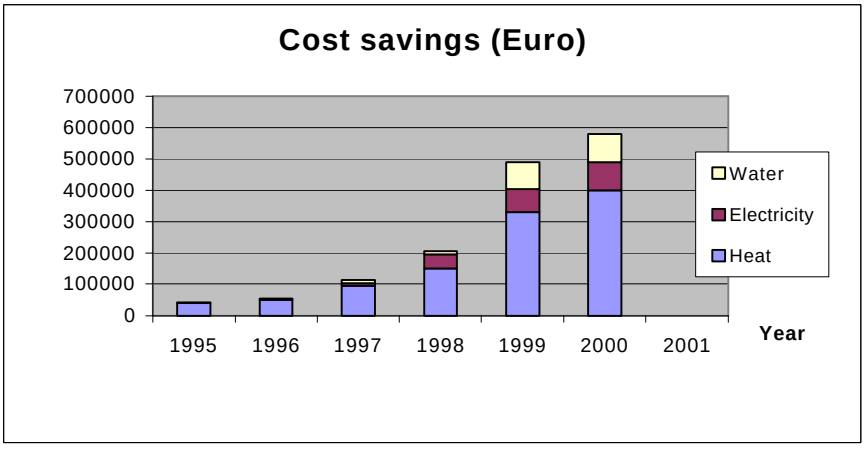
EVALUATION AND OUTLOOK

The intracting approach developed by the city of Stuttgart has in the meantime become a model for a great number of local authorities in Germany (particularly in the regional state of North-Rhine/Westphalia) and Austria. In Stuttgart, a total of Euro 3.32 million has been invested in 158 individual projects between 1995 and 2001.

In the first two years, financing agreements could only be concluded exclusively with city administration departments. From 1997 onwards, the City Treasury found a way to let the Environment Department also finance cost-effective projects at the autonomous undertakings (Eigenbetriebe) of the city. In the first 5 years, the Environment Department commanded over total budget funds of approx. Euro 2.3 million. In the year 2000, the initial 'start-up' financing ended. From that time onwards, measures are financed exclusively from the energy costs saved, which are returned to the Environment Department.

The capital recovery period of projects has averaged 4.5 years until now. This capital recovery period will become significantly longer over the medium term, as there are plans to increasingly finance or part-finance construction measures. Typical examples of projects implemented until now are the installation of frequency converters for demand-appropriate motor control, the installation of modern heating control equipment, the insulation of top-storey ceilings, the installation of water-saving shower fittings or the use of small-scale cogeneration (CHP) units.

The following figure shows the development of annual energy cost savings achieved by intracting projects. The 158 measures conducted by the end of 2001 yield total annual cost savings of Euro 0.7 million. The greater part of cost savings is achieved in heating energy, while electricity and water-saving projects have shares in total savings of about 20% each. In electricity-saving projects, investments and savings tend to involve small sums.



The annual savings generated by the projects figure 12,300 MWh heat, 1,500 MWh electricity and 31,700 m³ water. Reduced consumption is not the sole source of cost savings in all projects – in some projects technological measures are financed in order to reduce the power, gas or district heat capacity requirement (maximum demand). Total capacity savings to date figure 1.88 MW district heat, 1.34 MW gas and 0.27 MW power.

Under today's conditions, the financing model presented here offers a highly promising option for promoting vigorously the implementation of energy conservation measures. A precondition to this approach is that there is an office within the administration which, firstly, can provide a technical appraisal of potential measures and, secondly, has an overview of potential savings throughout the entire administration.

FURTHER INFORMATION

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