

Financing the Pot of Gold: Problems and Solutions with Energy Efficiency Finance in Eastern Europe

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1. SYNOPSIS

Obstacles and solutions to raising finance for energy efficiency projects in Central and Eastern Europe

2. ABSTRACT

As reform in central and eastern Europe progresses, attention is increasingly being focused on the need to address the extreme energy wastage characteristic of the region. Industry and municipal authorities are working with emerging private sector energy service companies and some utilities to develop technical solutions. These solutions require capital to finance a range of efficiency investments. However, traditional financial institutions find these investments to be largely unacceptable, and there is currently a significant gap between the technical and economic potential for energy efficiency and that being realised in the region.

Domestic banks are unwilling to lend long term finance and international financial institutions (IFIs) prefer lending amounts significantly larger than required for most energy efficiency projects. Further difficulties arise through IFI's requirements for sovereign guarantees for local government lending and uncertainty over the future of many potential private sector borrowers, which adversely affects credit ratings.

On the other side of the gap, efficiency project developers often fail to structure their projects to address the basic requirements of traditional lending institutions. Concerns such as establishing a revenue stream from energy saving projects and securing these payments are fundamental to a fundable project.

This paper provides an overview of both the funders' and developers' perspectives on energy efficiency. It then discusses potential solutions to these problems and addresses steps towards bridging the funding gap that results from this pervasive disconnect between funders and efficiency developers. A range of practical solutions, some already underway in the region, are outlined and discussed.

3. INTRODUCTION

The countries of central and eastern Europe (CEE) and the former Soviet Union (FSU) are characterised by extensive energy wastage and environmental pollution. The legacies of the centrally planned economies and supply oriented production methodologies have left the new democracies with old and inefficient infrastructure and institutions which hinder the pace of reform towards market oriented economies.

The energy sector plays a key role in the reform processes in the region. A review of basic indicators of energy usage highlights the problem: energy intensity in the CEE and FSU countries is between two and seven times higher than the average in western European countries(1). Taking a look at some of the features of energy infrastructure shows why; power stations are mostly old and are major polluters, huge volumes of gas are lost through leakage in transmission systems, piped hot water to heat housing developments leaks, is largely un-metered and often cannot be turned off, machines in industry use many times more energy than western equivalents, and the list goes on. In terms of primary resources, several countries depend on energy imports, priced in hard currencies, which they can barely afford. Others are over dependant on a sole primary source, such as nuclear and coal or are heavily dependent on imported Russian gas.

With energy prices increasing rapidly towards market levels, these factors represent a crippling handicap to the economic and environmental well-being of these countries. Until the energy problem has been resolved, and a means of meeting the needs of these countries on a sustainable basis established, developing prosperous market economies may be impossible to achieve.

So what can be done? The traditional view in the energy sector has been to address these problems from the supply side, replacing existing infrastructure and building new capacity to meet optimistic growth projections. However, this

approach ignores the enormous potential that can be unlocked by improving energy efficiency. In a report to the U.S. Working Group on Energy Efficiency in 1991, IIEC found that savings of 20% to 25% in current energy usage, with a payback of two years or less, are possible in the near-term. Over the longer term, with investment in new capital equipment, larger energy savings, of the order of 30% to 40% are possible(2).

The market to meet these energy efficiency needs in the CEE and FSU region is estimated to be worth \$20 billion for the industrial sector alone(3). IIEC estimates that on a conservative basis the total energy efficiency market would be worth \$40 billion - with a payback of less than three years. Compare this performance with typical supply-side investments in new generating plant where paybacks of between ten and fifteen years are the norm. The energy efficiency market in CEE and FSU countries thus represents a pot of gold waiting to be tapped.

4. HURDLES TO ENERGY EFFICIENCY FINANCE

Despite this huge potential, the response so far from the most influential investors in CEE and FSU countries, the multi-lateral development banks (MDBs), has been disappointing. Of approximately \$2.6 billion invested by the MDBs in the CEE and FSU energy sectors to the end of 1993, less than 5% is estimated to have been channelled into demand side efficiency measures(4). This over-emphasis on supply-side investment is not restricted to the major development banks, but extends to commercial banks and many of the other key players in the energy sector, namely policy makers in government and electricity utilities themselves. A number of factors help explain this bias:

- The nature of new supply-side investments is that they create a revenue stream which is relatively easy to use as security for project loans. End use efficiency investments, on the other hand, work to generate savings across a potentially large group of energy users. It can be difficult to ensure that these savings are available to repay debt. Such projects can therefore be difficult to structure in such a way as to provide adequate security against financial risk without additional corporate or sovereign guarantees. There are a range of solutions to this problem which have the effect of transferring financial risk from the MDB to participants such as private sector Energy Service Companies (ESCOs) or domestic banks. These are discussed in more detail below;
- Most energy efficiency projects involve relatively small amounts of money. However, development banks usually prefer to think big. It is much easier to arrange a single \$100 million loan facility than to try to work out how to lend the same amount in \$10,000 units. In practice, what this means is that the fixed costs associated with arranging loans can be prohibitive for some energy efficiency schemes. One way this problem can be addressed is by incorporating finance for efficiency into existing supply-side loans as an add-on facility. Another solution is to package efficiency schemes together to achieve sufficient critical mass to meet banks' lending criteria.
- Legal and regulatory frameworks in CEE and FSU countries restrict utilities' ability to participate in efficiency investments. This prevents utilities being able to pass on the costs of efficiency investment to consumers. So far activities to promote energy efficiency have been restricted to a few schemes such as the recent subsidised sale of 150,000 compact fluorescent light bulbs (CFLs) by the Czech electricity utility and the Ministry of Industry and Trade. Because Czech law does not allow power utilities to count energy conservation expenses as recoverable costs, the sale had to be conducted as a charitable activity. By allowing utilities to sell and profit from energy services, a huge market could be created with a ready-made payment system through existing billing. A typical project of this type is the leasing of CFLs to utility customers who repay from savings in electricity bills, without necessarily facing any additional costs at all;
- There is a shortage of the necessary skills in the CEE and FSU energy sectors to identify and develop proposals for efficiency projects. This arises from a combination of lack of knowledge of available technologies within industry and inexperience in dealing with financiers. As a result, there is a constraint on proposing efficiency projects to western lending sources. This problem is being addressed through wider publication of information on energy efficiency technologies and through training courses to pass skills on to the key figures involved with energy efficiency in CEE and FSU countries.

5. SOLUTIONS TO THE FINANCING GAP

Addressing these institutional barriers is one of the main tasks ahead for the governments and utilities which are presently in the process of restructuring their energy industries. Similarly, the international lending institutions have a role to play in developing more innovative financing structures and lending criteria to make efficiency the key issue in energy sector lending.

5.1 Policy Initiatives

One of the most important changes which the MDBs, governments and utilities must develop is to broaden the appraisal procedures for new energy projects in order to consider demand-side potential as well as supply-side expansion. This approach is known as Integrated Resource Planning (IRP). IRP differs from conventional utility planning by requiring that utilities compare equally the costs and benefits of both demand and supply side resources. This means that a utility looks at its energy service requirements, not simply commodity energy demand. In other words, the utility considers its customers needs, including what appliances and technologies may provide cost-effective demand-side solutions such as water heater insulation and energy efficient lighting.

The signs are that IRP is beginning to be adopted as a necessary appraisal methodology by MDBs involved in CEE and FSU countries. The European Bank for Reconstruction and Development (EBRD) has made use of IRP a priority in its most recent Energy Operations Policy. It is hoped that this will encourage more widespread use both within the lending community and the domestic governments and utilities.

5.2 Private Sector Investment

In parallel with this institutional progress, some interesting developments are occurring on the ground in several of the CEE countries - particularly Poland, the Czech Republic, Slovakia and Hungary.

One of the more exciting is the emergence of private sector ESCOs. These are reasonably familiar in the U.S. and to a lesser extent in western Europe but are new in eastern Europe. The basic role of an ESCO is to provide comprehensive energy efficiency services to consumers including project finance, engineering, project management, equipment maintenance and monitoring and evaluation. ESCOs can package their services using a variety of finance schemes including shared-savings, whereby the ESCO finances capital improvements in the client's buildings in exchange for a portion of the savings generated. This means that ESCOs are effectively able to turn the cost savings from efficiency measures into a revenue stream which can be used to repay debt and provide a profit. As energy prices have risen, the scope for consumers to save money through efficiency has increased and the market for ESCOs has developed. It is important to note that increasing prices alone appears to have only limited effect on energy consumption. Although consumers face higher energy bills, a lack of knowledge of what efficiency technology is available and the initial up-front costs of many efficiency measures inhibit widespread take-up. In Poland for example, expenditure on electricity represents approximately 10 percent of household income, which is double the rate in western Europe(5). Despite this there is little evidence yet of reductions in electricity consumption. Addressing these problems is where ESCOs can play a vital role. As well as bringing appropriate technologies to consumers, they can also provide the finance to meet initial costs. Arrangements vary but it is possible to structure contracts such that consumers pay no up-front costs and yet still benefit from reduced energy bills.

There are now a small but growing number of ESCOs operating in CEE countries. Several of these have been established by Western parent companies and are well capitalised, providing access to hard currency without draining domestic resources. One of these recently signed some of the first ESCO contracts with two large hospitals in the Czech Republic. A range of services are being provided including boiler replacement, installation of energy management systems and fuel conversion at a combined cost of around \$3.5 million. Projects of this type are replicable in literally thousands of sites throughout the region - housing schemes, schools and government buildings as well as hospitals.

ESCOs are also playing an important role in working with the private sector to develop energy efficiency projects. The potential for efficiency improvements in industry is enormous and capturing these savings will be essential if industry is to get on level terms with the competition. One important difference from municipal schemes and other projects involving government entities is that the private sector may be able to provide its own finance, or at least make available adequate corporate guarantees. This makes participation more attractive to international institutions, which would otherwise prefer a sovereign guarantee.

5.3 The Role of Local Banks

While ESCOs can play a key role in promoting energy efficiency, it is unrealistic to expect these companies to meet all energy service requirements. Local Financial Institutions (LFIs) can also play an important part by developing products to make available funds for energy efficiency. Apart from the basic process of lending domestic currency, LFIs can work to overcome some of the difficulties encountered by international institutions caused by the relatively small size of many efficiency projects. This can be addressed through creating and administering energy service

funds providing local currency loans for smaller projects which can be disbursed and administered at local level. MDBs can participate in such schemes by providing capital to the fund, with the local institution taking credit risk as well as the administrative burden, in exchange for a margin on amounts lent. One problem with these schemes is that interest rates can be high unless primary capital is provided at below commercial rates. This is not the case with MDBs such as the EBRD, however other sources are available; for example the Hungarian Credit Bank already operates a facility funded with German bi-lateral aid, which provides finance at below commercial rates. So far this has supported over 150 energy efficiency projects. In the Czech Republic the European Union has recently announced that the PHARE assistance program will be used to establish an ECU 5 million revolving energy efficiency fund. If successful, the approach could be replicated throughout the region.

There are many examples around the world of special purpose energy efficiency funds. As well as direct capitalisation from international institutions, such facilities can be topped up from the savings made on energy payments. The city of Oslo in Norway has established a revolving fund for energy efficiency based entirely on a small surcharge of 0.16¢/kWh (equal to 2.9 percent of average electricity rates). The fund currently has a balance of approximately \$100 million(6). This sort of scheme could have tremendous potential in CEE and FSU countries as energy prices are being increased closer to world levels. Using a small portion of the rate increases in this way could make substantial funds available for energy efficiency. In turn these could be applied to efficiency projects to offset the impact of higher energy prices.

5.4 The Role of Non Governmental Organisations

The local and international network of non-governmental organisations (NGOs) is also playing a key role in developing the market for energy efficiency. IIEC is focusing on CEE and the FSU through its European office in London. We are in close contact with the major MDBs, the European Union, other local and international NGOs operating in the region, several active ESCOs as well as private sector energy companies in the U.S. and western Europe. Through this extensive network and IIEC's own experience in energy programs, policies and finance, we are able to bring together projects with local and international founders, together with advice on how to proceed. Other international groups are also working to promote energy efficiency in the region, for example the United Nations Energy 2000 program and the International Council for Local Environmental Initiatives, which has a European office in Freiberg.

Another important group of NGOs are the independent energy centres such as SEVEN and FEWE in the Czech Republic and Poland. These are successfully acting as a focal point for efficiency innovations in their countries and are able to bring local knowledge together with international expertise to assist in the development of energy policy as well identifying and encouraging individual projects.

Further institutional support is provided by the European Union Energy Centres operating in all the CEE capital cities. These can provide technical advice as well as acting as co-ordination centres for the EU programs such as PHARE, TACIS and Thermie.

6. ENERGY EFFICIENCY OPPORTUNITIES

With all of these participants in the CEE and FSU energy efficiency scene, there are good grounds for feeling optimistic about the future. However there is still a long way to go before finance for energy efficiency investments is as freely available as money for supply-side projects. Over recent months IIEC has received details of a number of interesting energy efficiency proposals from all sectors in Poland, Hungary, the Czech and Slovak Republics and Bulgaria which are illustrative of the range of opportunities that are available. Some typical examples are:

- The EU Energy Centre in Katowice is developing a project to replace inefficient small and medium sized coal boilers in the Katowice region. The new boilers are efficient self-stoking models which are expected to reduce coal consumption by around 40% as well as reducing emissions per unit of coal burnt. The project is currently at the pilot stage and a few boilers are under test. If this is successful there is a potential market in this region alone that currently consumes 25 million tonnes of coal per annum;
- Several private sector projects in the Czech Republic involving some of the major industrial companies. Proposals include a broad range of energy conservation measures and range in size from \$2 to \$10 million of initial investment. These projects are being developed by local ESCOs and represent an ideal opportunity to promote innovative private sector efficiency finance;

- The city of Handlova in the Slovak Republic has used the IRP approach to develop proposals for rehabilitation of the existing central plant and heat distribution system. This project is being developed jointly by the city authority, the Slovak energy utility, the local coal mining company and a private sector ESCO. Investment requirement is \$10 million.
- A street light retrofit in Upper Silesia, Poland. This project involves simply replacing inefficient mercury discharge lamps with high pressure sodium lamps, reducing electricity consumption by 50 to 70 percent. The scheme requires investment of \$1 million to finance retrofits in 3 to 5 cities. Payback is estimated to be 3 years;

The attraction of these projects, apart from their intrinsic merits, is that they are all replicable throughout the region, where literally thousands of similar schemes are looking for finance.

The efforts of the international lending institutions have so far been focused on developing the institutional framework and few projects like these have been successfully financed. However there are signs that the prospects for the future are better.

The EBRD has now established a dedicated Energy Efficiency Department (EED) with the objective of identifying and developing energy efficiency projects. IIEC is working closely with the EED and in particular we are assisting with project development in Poland and Hungary, which complements our other activities in the region.

The EED is now developing the financing mechanisms which need to be available to 'bridge the gap'. These include initiatives such as revolving funds, co-financing with bi-lateral funds - which can soften the cost of finance - and working with ESCOs which are now emerging in the region. This is seen as a particularly important area for the EBRD and the EED is actively working on proposals for investing risk capital in the new ESCOs that are emerging in the CEE and FSU region.

Another important aspect is the use of technical assistance funds which the EBRD can access for use on project development. As these facilities are put in place, the challenge will be to identify projects and create financing structures which enable commercial investments from institutions like the EBRD to be applied to projects which remain constrained by low energy prices, high inflation and high interest rates. These economic factors are steadily improving but there is still some way to go. In the meantime we are hopeful that we can use the resources that are available now to successfully finance opportunities like those described above.

7. CONCLUSION

There is little doubt that the energy efficiency pot of gold represents a vital resource in the development of CEE and FSU economies. The process of exploiting this potential is already underway, but there are still obstacles to be overcome:

- MDBs need to address the limitations in current lending practices and develop new methods to overcome these;
- Energy efficiency needs to be made a priority objective in the new energy laws and regulations, for example with the introduction of IRP methodologies;
- Training and communication need to improve in order to ensure the skills to develop efficiency projects are available and the most appropriate people and institutions are involved;
- Perhaps most important, the key figures in the reform process - governments (east and west), utilities and agencies like the MDBs - must recognise that the needs of the CEE and FSU countries are met by sustainable growth and sensible use of resources, not by over-emphasis on supply expansion.

The benefits of energy efficiency are well established, the barriers to implementation are clear. The challenge now is to tackle the issues and unlock the pot of gold.

1. Defined as Energy/GDP ratio. Source: World Resources 1994-95, UNEP, World Resources InstitutEnergy

2. *Efficiency, Developing Nations, and Eastern Europe*, p22. A report to the U.S. Working Group on Global Energy Efficiency, IIEC, June 1991.
- 3 Alliance to Save Energy, U.S., 1993.
- 4 Annual reports and Monthly Operational Summaries of the World Bank, 1990-1994. Annual reports of the IFC, EIB and EBRD, 1990-1993.
- 5 Energy Use in Poland, 1970-1991: Sectoral Analysis and International Comparison, 1993.
- 6 Comprehensive Municipal Energy Efficiency, Profile #79, The Results Centre, 1993.

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