FINANCING ENERGY EFFICIENCY IN COUNTRIES MAKING THE TRANSITION TO A MARKET ECONOMY: POLICIES AND MEASURES

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FOREWORD

This Working Paper is one of a series of eighteen studies carried out under the project: "Policies and Measures for Possible Common Action". The project was carried out by the OECD, together with the International Energy Agency, in 1996 and 1997 for the Annex I Expert Group on the United Nations Framework Convention on Climate Change (UNFCCC). The goal of the project was to assess a range of cost-effective greenhouse gas mitigation policies and measures for countries and Parties listed in Annex I to the UNFCCC. The eighteen working papers have been made widely available as analytical input to negotiations under the UNFCCC Ad hoc Group on the Berlin Mandate. The working papers may also provide input to national decision making processes on greenhouse gas mitigation policies. The measures analysed do not necessarily represent policy preferences of Annex I Parties.

The project benefited greatly from substantial input from delegates. Three successive chairmen of the Annex I Expert Group provided outstanding leadership for the project: Doug Russell (Canada); Ross Glasgow (Canada); and Ian Pickard (United Kingdom). The work was supervised by Jan Corfee Morlot (OECD). Fiona Mullins (OECD) drafted the initial framework which was used to structure the eighteen working papers.

The Annex I Parties or countries referred to in this document refer to those listed in Annex I to the UNFCCC: Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Czechoslovakia (now Czech Republic and Slovakia), Denmark, the European Community, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom and United States. Where this document refers to "countries" or "governments" it is also intended to include "regional economic organisations," if appropriate.

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Objective and Approach

The objective of this study is to provide input to the Annex I Expert Group in the context of Berlin Mandate negotiations. The study identifies measures that governments could take to enhance energy efficiency financing in EIT countries. The study addresses two broad categories of measure:

- capacity building measures; and
- measures to re-direct current financial flows towards energy efficiency.

Context

There is large scope for cost-effective greenhouse gas mitigation in countries that are making the transition to a market economy ("economies in transition" or EIT countries).[1] In the short term, EIT countries' greenhouse gas emissions are likely to remain well below 1990 levels. However, their greenhouse gas emissions could rise steeply in the future unless energy efficiency and other measures can break the correlation between GDP growth and greenhouse gas emissions. Energy efficiency often provides the most cost-effective opportunities for greenhouse gas mitigation and energy supply. However, at present, only a small portion of total finance that goes to EIT countries is spent on energy efficiency. Numerous barriers obstruct even cost-effective energy efficiency projects, and so the environmental and economic benefits associated with energy efficiency are not realised.

Over the last five years, the general trend in global finance flows has been an increase in private sector finance, while public sector aid has declined. Private capital flows to emerging markets increased dramatically during the 1990s, but many EIT countries have not been able to attract significant amounts of private sector investment. Foreign private sector investment to a few EIT countries (such as the Czech Republic and Hungary in 1995) far outweighs bi-lateral and multi-lateral official finance. However, private sector finance in many EIT countries has so far been modest, and official finance is still their largest pool of external finance.

Government policies can significantly influence macro-economic conditions such as unemployment, inflation levels, and budget deficits. Economic trends and the macro-economic and legislative policies of EIT countries form the basis for the local investment climate. Lack of economic stability is a key obstacle to attracting private capital. The economic situation in EIT countries is changing rapidly. Some EIT

[1] Countries that are undergoing the process of transition to a market economy are listed in Annex I to the UNFCCC. The "EIT countries" are ten countries from central and eastern Europe - Bulgaria, Czech Republic, Slovakia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania (also Croatia and Slovenia, which are not listed in Annex I, but have acceded to EIT Annex I Party commitments) - and three Commonwealth of Independent States countries - Belarus, the Russian Federation, and the Ukraine.

countries have already implemented macro-economic policy reforms that will encourage investment, such as currency convertibility, and ensuring price stability. However, other EIT countries have not yet taken these steps. Each EIT country has different natural resources, institutional capacities, and historical developments that will influence its policy decisions.

In the energy sector, uncertainty over privatisation of utilities, low prices (such as for residential energy), and general instability of prices continue to deter investors. Many EIT countries still need to reform their energy sectors by removing energy subsidies, privatisation, and providing the market structure and regulations needed for competition between energy suppliers. EIT governments must choose and undertake such reforms. Donor countries can support them by making aid and loans to EIT countries conditional on policy reforms.

The transition process will not be sustainable unless strong institutions emerge to underpin the new markets. Economic reforms create the demand for institutional change, but institutional reform tends to lag behind other reforms. Most EIT countries have not yet fully developed the legal, regulatory and institutional frameworks needed to support investments. Institutional reforms aimed at establishing clear property rights, sound legal and financial frameworks, and effective government, are at different stages in different countries. There is little that Annex I governments can do to improve institutions in EIT countries in the short term. Sharing experience between EIT countries through workshops and dissemination of information may be a good first step. OECD governments could second experts to assist EIT countries to meet the requirements of the World Trade Organisation (WTO) accession process. All EIT countries have applied to join the WTO, but the information requirements are extensive. Membership of the WTO will spur domestic institution-building and provide strong incentives not to maintain or establish barriers to trade. EIT governments themselves will have to take the most important measures to improve institutions. Such measures include banking reform, debt recovery programs, stronger fiscal discipline, and legislation to provide a supportive commercial and legal framework for investment, including judicial institutions and enforcement mechanisms.

Capacity Building Measures

Even the relatively small level of finance that is currently available in EIT countries is not dispersed to projects efficiently because of barriers associated with identifying, developing, managing and financing projects. Capacity-building in EIT countries could help to overcome information and motivation barriers. Capacity-building could also help to create a business climate that is attractive to foreign investors and facilitate technology transfer. Possible measures to build capacity are:

- Energy efficiency centres to reinforce or replace the existing Energy Centres (funded by the European Union), most of which are to close soon. These centres could be focal points for market assessments, training, information and publicity, demonstration projects, and financing schemes. A regional “virtual” centre using the internet could supplement these centres. The virtual centre would draw together information and provide communication channels between centres, with links to other energy technology, investment and capacity-building resources on the internet;

- Public awareness initiatives such as promotional material raise public awareness; workshops, and information sharing on public awareness programs by Annex I governments;

- Annex I Parties could establish accreditation and standard qualifications for training initiatives by a wide variety of bodies - bilateral, local universities, professional associations;

- Support for energy services companies (ESCOs). Specific measures include: use of "performance contracts" by EIT governments;2 a common energy-saving measurement protocol; and development of standard ESCO contracts and financing mechanisms.

- Annex I Parties could urge MDBs to make concessionary finance available to Energy Services Companies (ESCOs), which can act as vehicles for channelling MDB and related private sector finance into energy efficiency ESCOs. In countries where it is difficult to establish private sector ESCOs, it may be possible to develop a publicly owned ESCO that the government could privatise at some point in future. This would enable ESCO activity to begin in those EIT countries that are further behind in the process of transition.

Measures aimed at redirecting current financial flows

Measures to re-direct private sector finance from energy supply investments towards energy efficiency and other investments that mitigate greenhouse gases are the second broad category of measure considered in this study. These measures are important because private investment flows are a huge potential source of funding, if EIT countries can attract them. Aid flows are not increasing significantly and so it is also important to maximise the effectiveness of existing government finance. Possible measures to redirect current financial flows are:

- Annex I Parties, as shareholders, directors and borrowers could urge MDBs to improve their contribution to greenhouse gas mitigation. Annex I Parties could ask MDBs to: undertake project screening for energy efficiency opportunities; offer co-financing and concessionary finance for energy efficiency; disseminate policy advice; build capacity both within MDBs and in EIT countries; and use investment appraisal techniques that reflect greenhouse gas externalities. It is not enough for MDBs to simply make money available at a 'window' in a lending institution; they need to actively promote their finance to ensure that EIT banks are able to disburse it to projects.

- OECD member country governments could encourage the OECD Export Credits and Credit Guarantees Group to agree that Export Credit Agencies should take account of environmental considerations when deciding whether to provide official support for projects. OECD countries could also encourage the Group to agree that Export Credit Agencies should provide information on the environmental impact of the projects they support.

- The lack of government guarantees for major energy efficiency projects is a significant financial barrier. In contrast, governments increasingly provide guarantees to mobilise private finance for electricity supply projects. EIT governments could consider providing guarantees for energy efficiency projects, which could help investors by sharing project

[2] Under this model, an outside energy services company ("ESCO") expert in energy efficiency improvements would be contracted to make the necessary investments to improve the organisation's energy efficiency. The government might pay the ESCO through a third party financer and the ESCO would take on some or all of the risk of the promised energy savings not being realised. When the contract period ends, the government earns the full cost savings from improved energy efficiency. By using this approach, EIT governments would create a demand for the services of ESCOs and stimulate ESCO activity.

risks, extending the length ("term") of a loan, or increasing the equity participation in well-capitalised ESCOs. Government guarantees could also enable EIT governments to link efficiency improvements to investments supported by such guarantees, such as house building and renovation, industrial restructuring.

- The Project Preparation Committee (PPC) matches funding from MDBs, bilateral, national funds and the private sector with suitable energy and environmental projects. Annex I Parties could ask the PPC to support more energy efficiency projects.

- EIT governments could establish domestic energy efficiency funds, and encourage greater use of national environmental funds for energy efficiency projects.

- Annex I government procurement programs could stimulate markets for energy efficiency. Governments, bilateral aid agencies and MDBs could facilitate the creation of buyers' pools in the private sector. Aggregating energy efficiency investments into larger transactions can reduce transaction costs and help to create a more attractive market for suppliers of energy efficient technologies and services.

Conclusions

The private sector clearly has an important role to play in providing finance that could be used for energy efficiency investments in EIT countries. Donor governments can adjust their spending priorities in aid plans and through official support provided to their exporters. However, donor governments can only indirectly influence the vast potential pool of private sector finance. Many of the most important measures to attract foreign investors are measures that only EIT governments can implement. Such measures include reforming macro-economic policy frameworks, reforming energy market structures and pricing, banking reform, debt recovery programs, strengthening the commercial and legal framework for investment, and setting up judicial institutions and enforcement mechanisms. These are difficult tasks that often involve lengthy political processes.

This study identifies many measures that Annex I governments could use to improve financing of energy efficiency in EIT countries. The most politically feasible (and hence realistic) measures to improve energy efficiency financing will be those that are in line with domestic priorities in Annex I countries (both EIT and non-EIT). For example, many EIT countries in central and eastern Europe, place high priority on "approximation" of domestic policies to bring them closer to European Union policies. They also give high priority to energy security and reduction of local air pollution. Improving finance for energy efficiency investments would facilitate progress towards all three of these priorities. Similarly, in OECD donor countries, enhanced investment opportunities in EIT countries that have beneficial impact on domestic growth are more likely to find favour and funding.

BACKGROUND INFORMATION

Approach and Study Structure

This study identifies measures to improve financing for energy efficiency in EIT countries. The study focuses on measures that governments can take to enhance financing of energy efficiency in EIT countries. Some measures are actions that EIT governments could take to encourage investment (both domestic and foreign) and aid. Other measures could be taken by all Annex I Parties or OECD governments through the International Finance Institutions (IFIs), bilateral aid agencies, or inter-governmental institutions.

The objective of the study is to provide input to the Annex I Expert Group in the context of Berlin Mandate negotiations. This study draws on background information provided in an earlier study.[3]

The background section of the study provides information on the energy efficiency potential in EIT countries and finance flows to these countries. The background section also discusses the general policy framework in EIT countries which is one of the most important factors in attracting investment. The next section of the study identifies measures under two broad categories: measures to build capacity in EIT countries; and measures to re-direct current finance flows towards energy efficiency investments.

Context

The economies of Annex I EIT countries are changing rapidly. Important economic, political and institutional differences between EIT countries make it impossible to generalise across the whole region. It is clear, however, that there is large scope for cost-effective greenhouse gas mitigation in EIT countries.[4]

Carbon intensive fuels dominate the energy supply in many EIT countries. In addition, energy is used less efficiently in EIT countries than in other Annex I countries. For example, EIT countries use 20-50 per cent more energy to heat buildings than northern European countries, and producing a range of industrial products in EIT countries currently takes 15 per cent to 100 per cent more energy. In the short term (pre 2005 or 2010), EIT countries' greenhouse gas emissions are likely to be well below 1990 levels because economic activity is relatively low. However, greenhouse gas emissions are forecast to rise steeply in the future as EIT countries progress in making the transition towards a market economy. Energy efficiency and other measures could lessen the correlation between Gross Domestic Product (GDP) growth and greenhouse gas emissions.

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[3] "*Financing energy efficiency in Countries with Economies in Transition*" OECD/GD(97)73

[4] The study "*Financing energy efficiency in Countries with Economies in Transition*" OECD/GD(97)73, provides estimates of the potential for reducing greenhouse gas emissions cost-effectively through improved energy efficiency in EIT countries.

A wide range of impediments inhibits the uptake of cost-effective energy efficiency opportunities. These are often described as "barriers to energy efficiency". Even in OECD countries, levels of energy efficiency are below the optimum for economic efficiency because of such barriers. The barriers are more formidable in EIT countries, and EIT countries face additional difficulties that OECD countries do not experience. If the barriers can be overcome or reduced, large and highly cost-effective energy savings could be exploited. The earlier study concluded that substantial savings of CO_2 are possible at no net cost by capturing the economic and "achievable" energy efficiency potentials in EIT countries.[5]

The EBRD conservatively estimates that the value of energy efficiency opportunities with less than a 3.5 year payback period in EIT countries is more than $52 billion at current energy prices.[6] Normally, investors would consider investment opportunities such as these to be very attractive. However, at present investment flows are not sufficient to provide this amount of finance. The lack of investment given the size of the opportunities that exist indicates the magnitude of the barriers that exist. The main barriers to financing energy efficiency can be classified in six main areas:

- macro-economic conditions;
- lack of information and experience;
- lack of credit history;
- weak institutions and unclear or common ownership;
- small-scale nature of efficiency projects;
- low and uncertain energy prices.

The earlier study "Financing Energy Efficiency in Countries with Economies in Transition" documents the main financial institutions and types of activity in EIT countries. Funding typically flows from these institutions through a range of financing mechanisms. These include bilateral aid, multi-lateral development agency grants, international financial institution loans, private sector equity investments, joint ventures, private sector loans, and bond purchases.

Over the period 1991 to 1995, private sector direct investment and bi- and multilateral finance at or near commercial rates appear to have increased markedly. Official aid appears to have remained stable, although increasing slightly in 1995, as shown in Figure 1 below. These data are uncertain and must be interpreted with caution. The private sector portfolio investment numbers shown in Figure 1 below may be heavily under-estimated.[7] Figure 2 shows EBRD estimates as an alternative source of information.

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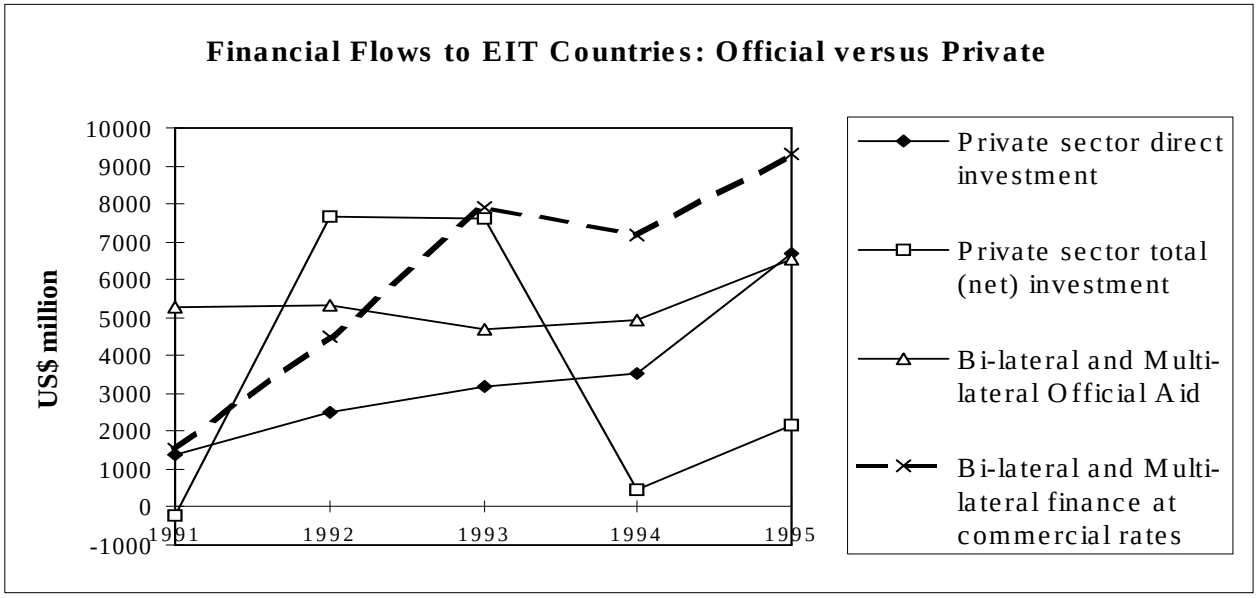
5 "achievable" potential was defined as between half to two-thirds of the economic potential, depending on the country, to reflect the barriers that prevent even economic energy efficiency potential from being realized.

6 Peter Hobson, Energy Efficiency Unit, EBRD, London, personal communication, January 1995.

7 Jane Saint-Sernin OECD/DAC, personal communication: the private financial flows may be understated for several reasons: the reporting of equity holdings (stocks and shares) is incomplete; insurance and pension funds are not covered; and some countries cannot give a geographical breakdown for other types of private flows such as foreign direct investment, export credits or bank claims. This is a general problem for developing countries, but may be less serious for the CEEC/NIS countries as these have been monitored for many years.

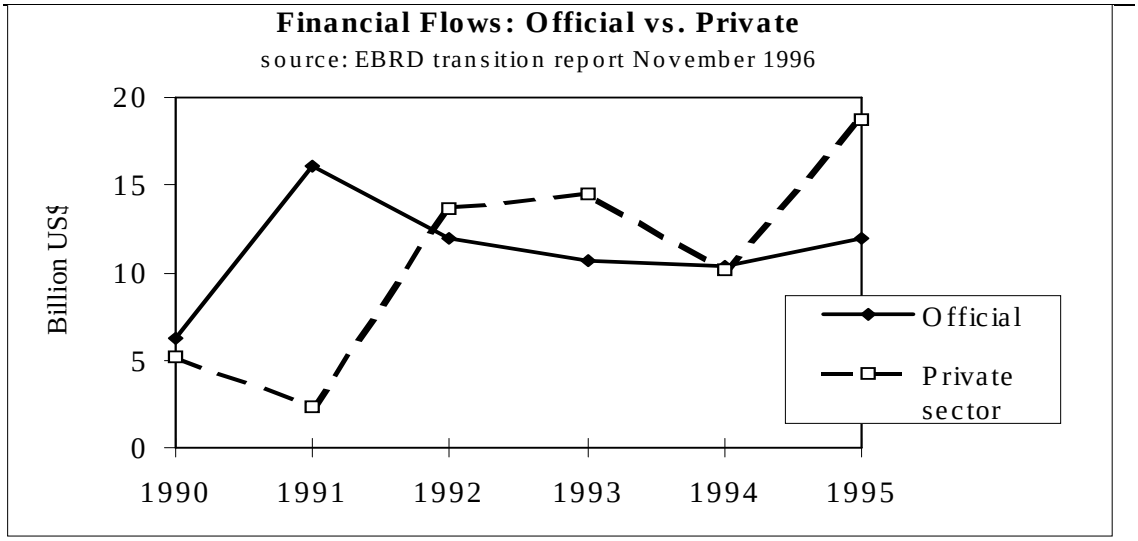
Figure 1. OECD estimates of official and private sector finance to EIT countries



Source: OECD/DAC, 1997

Notes: Bi-lateral and multi-lateral official aid includes finance from official agencies, including state and local governments, or their executive agencies. The OECD/DAC defines official aid as transactions that have the promotion of the economic development and welfare of developing countries as their main objective. Official aid transactions must be concessional in character and convey a grant element of at least 25 per cent. Bi-lateral and multi-lateral finance is transactions from the official sector whose main objective is other than development motivated, or, if development motivated, whose grant element is below 25 per cent. The main classes of transaction included here are official export credits, official sector equity and portfolio investment, and debt re-organisation undertaken by the official sector at non-concessional terms (ref OECD/DAC 1997, p. 249). Private sector net investment includes direct investment, portfolio investment (bonds and equities) and export credits (ref OECD/DAC 1997, p. 250).

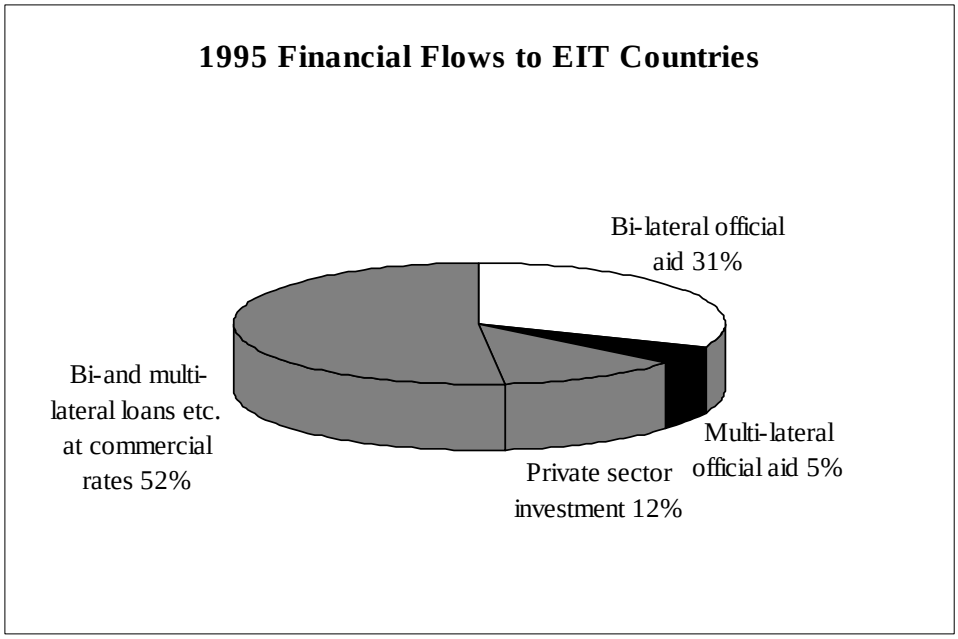
Figure 2. EBRD estimates of official and private sector financial flows



The private sector could potentially have a powerful influence on investment in EITs, as it has had in other emerging market economies. However, the twelve EIT countries together attracted only 13 per cent

of the global capital flows.[8] According to OECD statistics, total official aid and loans at or near commercial rates from governments and multi-lateral institutions to the group of EIT countries still outweigh private sector investment (see Figure 3 below).

Figure 3. Private, Bi-lateral and multi-lateral finance to EIT Countries in 1995



Source: OECD/DAC, 1997
N.B. private sector investment is likely to be under-estimated. See footnote 7.

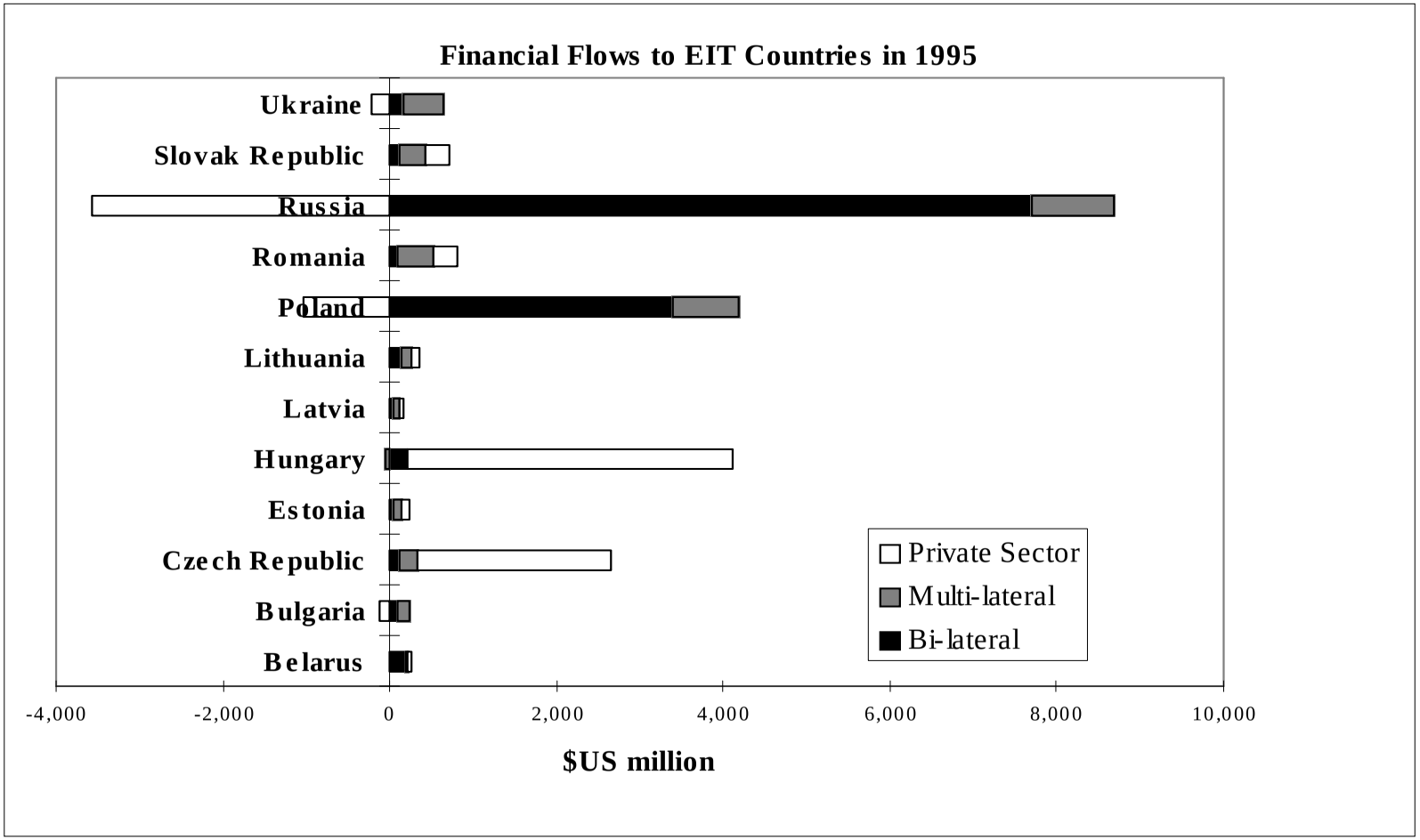
Many EIT countries have not been able to capitalise on the much cited growth in "emerging market" investment. Some countries experience capital outflows as domestic investors send private capital to safer or more productive uses in other countries. Official development aid remains the largest source of external finance for most of these countries. Official aid is particularly important for countries that do not yet have successful economic stabilisation programs, as they find it difficult to attract foreign direct investment. In addition, only a small portion of the finance that is invested in EIT countries is spent on energy efficiency, although energy efficiency investments are among the most cost-effective investment opportunities.[9]

The proportions of private sector versus official finance vary widely for different countries, as shown in Figure 4, and in different years, as shown in Figure 5 below.

[8] World Bank, 1996 p. 136.

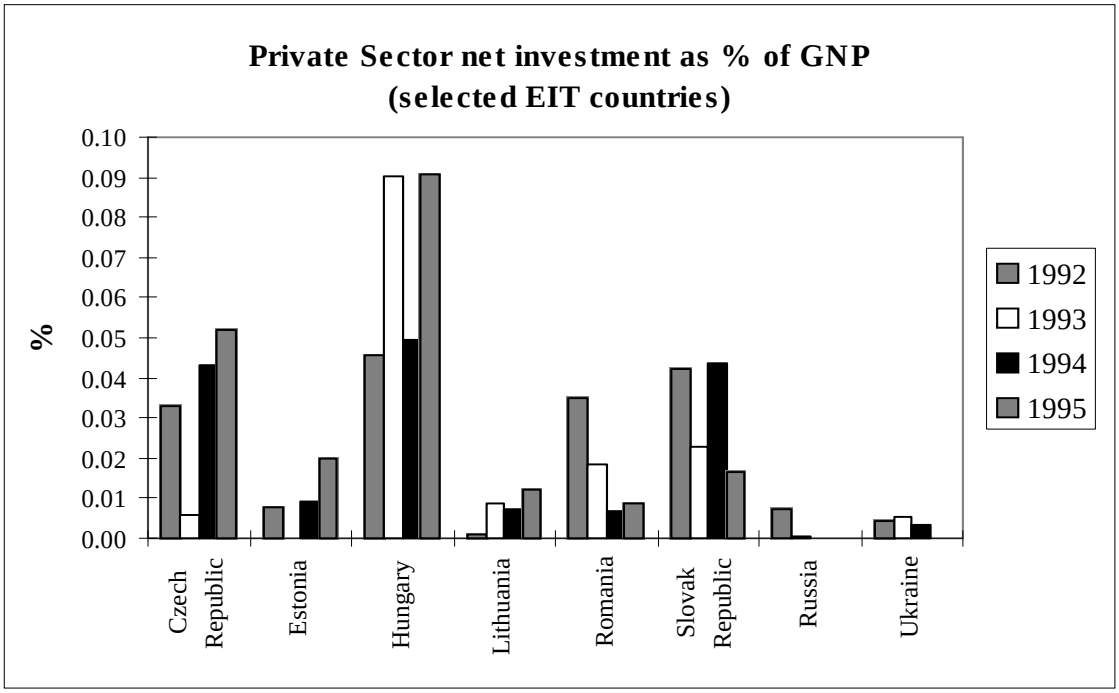
[9] OECD, 1996, p.48 and 55

Figure 4. Finance Flows to Individual EIT Countries (including capital outflows)



Source: OECD/DAC, 1997 (N.B. private sector investment is likely to be under-estimated. See footnote 7).

Figure 5. Private sector investment in EIT countries as percentage of GNP (1992 to 1995)



Source: "Geographical Distribution of Financial Flows to Recipients" OECD/DAC 1997

Economic trends, macro-economic conditions, and economic policies of EIT countries provide the basis for the local investment climate. Lack of economic stability is an obstacle to achieving significant volumes of private investment in many EIT countries. Actions of governments significantly influence macro-economic conditions such as unemployment, inflation, and the budget deficit. At this point, six years into the transition process, different EIT countries are at very different stages of transition. Each EIT country has different natural resources, institutional capacities, and historical developments that will influence policy decisions. Some EIT countries have already implemented macro-economic and energy sector reforms or have begun to implement them. Other EIT countries still need to take these steps. One indicator of progress on market reform is the extent to which EIT economies are open to both domestic and foreign trade and competition. Figure 6 below illustrates the extent of liberalisation in EIT countries.

Foreign investment can be an important catalyst in the transition to a market economy. Investment facilitates exchange of modern technology and management practices between domestic and foreign partners. Investors provide strong incentives for governments to development institutions and implement economic policies that benefit the whole economy.[10]

Energy prices are converging with world market price levels in many EIT countries. However, low prices in some sectors (such as the residential sector), and general instability of prices continue to cause uncertainty that deters potential investors. The domestic banking sectors in most EIT countries are weak. Intense competition for capital (which is often available only for short term lending) has 'crowded out' potential energy efficiency investment.[11]

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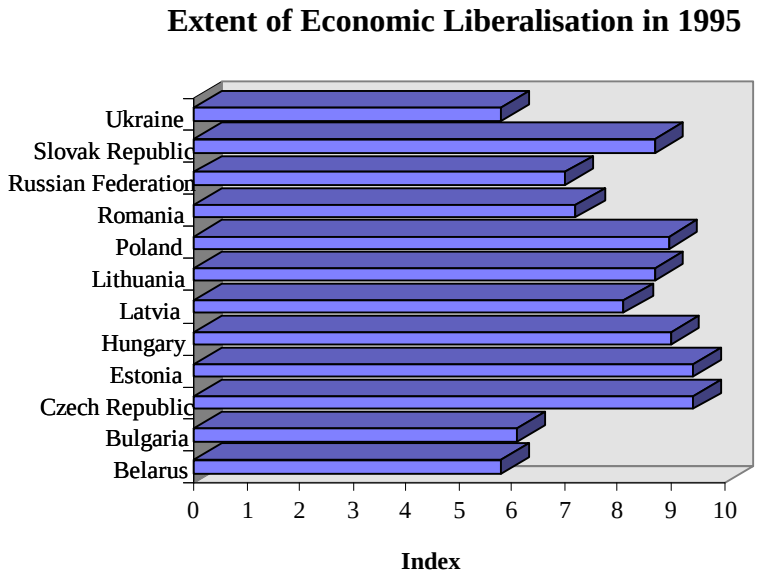
[10] CCET Activities Report, 1995, OECD, Theme 4 p.4

[11] In some countries Governments offer Treasury bonds at extremely attractive rates in order to finance domestic debt. This reduces the incentive for local banks to lend money for investment projects, including energy efficiency.

Figure 6. Extent of Liberalisation in EIT Countries



The index in this chart is made up of information on price liberalisation and abolition of state monopolies (weighting 0.3), elimination of export controls and taxes, substitution of low to moderate import duties for import quotas and high tariffs, current account convertibility (weighting 0.3), and entry of new firms (weighting 0.4).
Source: World Bank (1996), p.14

There are many policy recommendations for macro-economic policy reform in World Bank, International Monetary Fund, EBRD and OECD publications.[12] Only EIT governments can carry out general policy reforms. However, donor countries can support policy reform by making aid and loans available to EIT countries on the condition that they make such reforms. Provision of grants an loans should help to create a more attractive environment in EIT countries for private finance flows. External assistance should not simply offset capital flight that has been triggered by faulty macro-economic policies. Even in countries that have made progress in macro-economic reform and economic stabilisation, governments may lack the funding to improve institutions or to address urgent social problems.

The transition process will not be sustainable unless strong institutions emerge to underpin the markets. Economic reform itself creates demand for institutional change, but institutional reform tends to lag behind other reforms.[13] Most EIT countries have not yet fully developed the legal, regulatory, and institutional frameworks needed to support investments. For example, many EIT countries do not have traditional legal institutions for enforcing contracts, incorporating enterprises, protecting creditors against

12. For example, some publications on macro-economic reform include: World Bank Development Report (1996) "From Plan to Market", Oxford University Press, NY, USA 1996; Transition Newsletter about Reforming Economies: a regular publication of the World Bank's Macroeconomic and Growth Division (PRDMG), Policy Research Department (contact: Fax: (202) 533 1152, E-Mail: JprochnowWalker@Worldbank.org); OECD (1996) "The Assistance Programmes for the Central and Eastern European Countries and the Former Soviet Union". ISBN 92-64-14776-4; OECD (1996) "Reconciling Trade, Environment, and Development Policies: The Role of Development Co-operation". ISBN 92-64-15362-4 OECD Publications, Paris, France.

13. World Bank, 1996, p. 13.

default, preventing business fraud, etc.[14] As with macro-economic reforms, institutional reforms aimed at establishing clear property rights, sound legal and financial frameworks, and effective government, are at different stages in different countries.[15]

Only EIT governments can implement the most important institutional measures to improve the attractiveness of EIT countries for investment. Measures to encourage investors include: banking reform; legislation to provide a supportive commercial and legal framework for investment; judicial institutions; and enforcement mechanisms. These measures will depend on government staff in the EIT countries having the resources to implement them, and as a consequence they may take some time to fully develop.

Membership of the World Trade Organisation (WTO) would spur domestic institution building in EIT countries and provide strong incentives against maintaining or establishing barriers to trade. All EIT countries have applied to join the WTO, but the information requirements of membership are extensive. Joining WTO would ensure access for transition economy producers and investors to other markets, and provide some protection against imposition of trade barriers by other countries. WTO membership would also enhance the domestic political feasibility of maintaining open economies in the face of strong sectoral lobbies.

[14] Transnational Vol. 8, No 1, March 1996

[15] World Bank, 1996, p. 17. provides data on different levels of development in different groups of EIT countries for different areas of institutions - laws and legal institutions, the banking sector, role and management of government, and social policy.

POLICIES AND MEASURES

Capacity building

Even the relatively small amount of finance that is currently available in EIT countries is not dispersed to projects efficiently because of barriers associated with identifying, developing, managing and financing projects. Capacity building could help to reduce these barriers. Box 1 provides examples of capacity building requirements in EIT countries.

Box 1. Capacity Building Requirements

Government: Capacity building is needed for EIT governments to improve their ability to implement and enforce policies that encourage energy efficiency. At the city level, municipal governments need improved capacity to establish and implement the energy efficiency policies under their control. For example, municipal governments may be responsible for setting energy efficiency codes and standards, heat supply, and energy metering.

Industry: Industry managers need improved skills in economic and financial analysis, writing a business plan, identifying and negotiating financing, and bidding for equipment and services. Producers need improved skills in market research, technical design (and general innovation), identifying and negotiating financing, and marketing efficient products.

Banks: EIT banks capacity-building to enhance their ability to make contractual and financial arrangements for energy efficiency projects. Bank staff need improved understanding of energy efficiency measures, economics and risks.

Residential consumers: Home owners and other residential consumers need increased awareness of the cost savings of such products, the importance of homeowner or building occupant associations, and improved ability to identify and negotiate financing.

Source: After Martinot, 1996

Capacity-building requirements touch all sectors of society and cannot be solved simply or quickly. Possible measures that governments could take to help build capacity in EIT countries are assessed below under three main headings:

i. Energy efficiency centres;

ii. Accreditation and standard qualifications for training;

iii. Support for energy services companies (ESCOs).

Energy efficiency centres

Context

Most OECD countries have one central energy agency which implements energy policies and gives advice to the Ministries who develop these policies. Some EIT countries have established energy agencies over the last five years, but they do not exist in every EIT country. A network of 13 European Community (EC) Energy Centres was built up throughout the EIT countries between 1991 and 1996. However, the EC provided funding only for the initial few years and none of the EC Energy Centres has achieved financial self-sufficiency. Most of these Centres have now closed. In some EIT countries, national agencies have taken over their activities. In other countries, the activities will no longer take place. By early 1997 the Hungarian and Albanian centres were the only two energy centres remaining, although a few residual offices remained to finish off outstanding work.

The United States set up five independent non-governmental organisations (NGO) Energy Efficiency Centres in Poland (FEWE), Czech Republic (SEVEn), Bulgaria (EnEffect), Ukraine (ARENA-EC) and Russia (CENEf). The five Energy Efficiency Centres initially relied on funding from the United States government and United States national laboratories. However, they have gradually developed domestic funding sources, such as national government ministries, energy utility companies, and local consulting firms. For example, the Prague Energy Efficiency Centre (SEVEn) received domestic funding for 35 per cent of its costs in 1997 (other Centres have lower levels of domestic funding).

The energy (and energy efficiency) centres have been focal points for training and market sector analysis. Many have empowered local experts and supported a number of the energy policy reform initiatives (e.g. the Moscow building code, and the Polish Demand Side Management law). They have also carried out technical appraisals, supported private sector development through trade shows and trade mission liaison, and developed demonstration projects. The Energy Efficiency Centres have also carried out public information campaigns and energy efficiency awareness raising efforts. However some centres have been perceived as 'foreign' organisations because Western consulting firms have managed them. The isolation of some centres from national governments, an approach that aimed to give them independence of action, has undermined their longer term sustainability. Some government Ministries see the Energy Centres as competitors for funds and influence rather than as partners. In a few EIT countries, there are several competing agencies trying to attract assistance from international donors.

Some of the key ingredients of successful centres are:

- a degree of independence from government;
- domestic staffing and some domestic financial support; and
- good inter-action with a number of government departments and other institutions (e.g. private sector associations and university departments).

Such centres can facilitate capacity-building through activities such as the development of targeted information, training, demonstration, and policy development. The centres also provide a focal point for investors. The centres could help central and eastern European EIT countries to harmonise their environment and energy legislation with the European Union, as a step towards possible future accession to the European Union. For all EIT countries, such centres could contribute to economic restructuring and economic growth.

The centres could improve the demand for energy efficiency from a wide range of consumers, as well as directing investment flows to greenhouse gas mitigation projects. The centres could also help stimulate EIT markets for technologies with lower greenhouse gas impacts. They could become "centres of excellence" for training, information to raise public awareness, and policy advice to governments (local and national). Enhanced public awareness could have a considerable impact on improving energy efficiency and reducing greenhouse gas emissions if it leads to changes in behaviour. The relationship between awareness and behaviour change is very difficult to assess. A number of successful public awareness programs have been carried out in EIT countries (for example in Hungary, see Box 6 below). However, information on the lessons learned from earlier initiatives, and initiatives taking place in other countries is not widely disseminated. Sharing experiences in the use of government public awareness and information programs would help to improve their quality.

Measures:

Measures to strengthen existing centres or replace those that are closing are:

- OECD Annex I Parties could re-direct some of the current bilateral and multilateral aid that is spent on capacity-building to strengthen the existing centres in EIT countries or establish new ones;

- EIT government Ministries who currently fund research, policy and implementation activities could re-direct or re-focus these resources to sponsor the Centres. Although the majority of funding might initially come from OECD governments, EIT governments will also need to support the centres if they are to be sustainable in the long term.

- Regional 'virtual centres' using the internet could be used to provide access to information, and for communication between centres. An internet hub could be established with links to other energy technology, investment and capacity-building resources on the internet. The web page of the Regional Environment Centre for central and eastern Europe provides a possible model.

- EIT energy efficiency centres could link into the range of activities under the Climate Technology Initiative (CTI) to enhance their access to energy efficiency information (see Box 2 below). The centres could also act as liaison points for CTI activity.

Box 2. Climate Technology Initiative

The Climate Technology Initiative (CTI) is a co-operative effort by 23 OECD/IEA Member countries and the European Commission to support the objectives of the United Nations Framework Convention on Climate Change (UNFCCC). The CTI was launched at the 1995 Berlin Conference of the Parties to the UNFCCC. The CTI seeks to ensure that technologies to address climate change are available and can be deployed efficiently. The CTI includes activities directed at the achievement of seven broad objectives:

1) to facilitate co-operative and voluntary actions amongst governments, quasi-government and private entities to help cost-effective technology diffusion and reduce the barriers to an enhanced use of climate-friendly technologies;

2) to promote the development of technology aspects of national plans and programs prepared under the United Nations Framework Convention on Climate Change;

3) to establish and strengthen the networks among renewable and energy efficiency centres in different regions;

4) to improve access to and enhance markets for emerging technologies;

5) to provide appropriate recognition of climate-friendly technologies through the creation of international technology awards;

6) to strengthen international collaboration on short, medium and long-term research, development and demonstration, and systematic evaluation of technology options;

7) to assess the feasibility of developing longer-term technologies to capture, remove or dispose of greenhouse gases, and produce hydrogen from fossil fuels, and strengthen relevant basic and applied research.

Source: OECD/IEA web page at http://www.iea.org/climat.htm

Both western and eastern Energy Efficiency Centres or Energy Agencies could arrange networking and twinning programs. Boxes 3 to 5 below contain examples of networking and twinning programs.

Box 3. East/west networking and twinning

PHARE launched a multi-country programme in 1997 to stimulate networking and twinning activities between Western and Eastern energy efficiency offices. The programme encourages Western agencies to assist their Eastern partners through on-the-job training, study tours, shadowing, seminars, and concrete demonstration projects that the agencies develop and implement together. The programme is being managed on behalf of PHARE by three national agencies: Novem (Netherlands), ETSU (United Kingdom) and Ademe (France).

Urban and Regional Energy Efficiency Programme is another east/west twinning project financed by PHARE (DG1) and Ecos/Ouverture (DGXVI). In the first two rounds of this programme 130 cities and regions are co-operating on almost 35 projects. The projects have different aims, such as reducing energy use, stimulating energy awareness, and the development of long-term energy policies in these cities and regions. Cities in the programme participate in a "Twinergy" network, which enables them to learn from each other's experiences. The programme has been successful in generating energy efficiency projects, and in increasing the capacity of cities to undertake such projects.

Source: Brown, Ian (1996), Chandler, William (1996).

Box 4. Bilateral networking

The Dutch SCORE programme is a bilateral network arrangement for Hungary, Poland and Latvia. The three EIT national energy (efficiency) agencies manage the programme, and it reflects the needs and wishes of the EIT countries. The programme finances a range of activities that assist in the development of different institutes that are involved in energy efficiency (e.g. training, creating awareness for energy efficiency, and running energy efficiency demonstration projects). The programme aims to develop long-lasting structures that can help EIT countries develop and carry out effective energy efficiency strategies.

Source: NOVEM (1996),

Box 5. Municipal networks

The Polish 'Energie Cites' Network became a legal entity in June 1994, but has been active as an Association since July 1992. It arose from a series of events supported by ADEME, the French Energy and Environment Agency, several Polish cities and the Polish Foundation for Energy Efficiency (FEWE). These events included seminars, training and staff exchanges. Twenty-eight municipalities and unions of municipalities signed a letter of intent in October 1993 and the Association currently has just under 30 members. A small full-time secretariat is based in Krakow. Other EIT countries have begun to organise similar Municipality networks. In Romania, the Energy Cities Network (OER), has been operating for around 2 years. OER currently has 32 members, predominantly among the second tier of cities in the country (in terms of population). OER has technical working groups though these are not fully effective yet. Funding is mainly from EU sources such as PHARE and Ecos-Ouverture. OER has a small secretariat in Sibiu and produces a newsletter three to four times per year. Discussions on setting up such a network in Hungary were taking place in late 1996.

Source: Adam Gula, Personal Communication

Annex I Parties could hold international workshops on public awareness campaigns. Workshop participants might include energy efficiency centres, government officials, trade associations, and chambers of commerce.

Box 6. Public awareness campaign in Hungary

In the past ten years there have been three nation-wide energy-saving campaigns in Hungary. The most recent was a PHARE energy saving campaign in 1993, an energy saving campaign undertaken by the Ministry of Industry and Traded and co-ordinated by the Hungary-EC Energy Centre. A media campaign using television, cinema, and newspaper advertising was the central element of the campaign. Television was used extensively to maximise the reach and frequency of the message. In the first part of the television campaign a 60 second advertisement was broadcast 16 times as an initial attention grabbing message. In the second phase a 30 second advertisement was broadcast 40 times as a reminder of the message. The slogan of the campaign was "You pay twice" i.e. once for wasted energy and once for the environmental damage.

A public-relations campaign for the programme began and ended with a press conference attended by radio, television and newspaper journalists. A weekly press release was issued, each with a different theme: such as "energy saving at home" and "how to save energy in cooking water use". A leaflet giving simple low or no cost energy saving tips for householders was prepared and distributed with the co-operation of electricity distribution companies. A schools programme was also implemented for children aged 10 - 14 years. The schools programme included a competition asking questions about energy use and energy saving with prizes of T-shirts and mugs with the logo and slogan of the campaign. There are both positive and negative lessons from this project:[16]

* Publicity campaigns can succeed in changing even deeply held attitudes;
* Accurate targeting of the message, and creative advertising with strong impact are important;
* Television advertising was the most effective medium to influence attitudes, and press advertising was a useful support to television advertising, but cinema advertising appeared to be ineffective.

Source: Hungary: Stabilisation of the Greenhouse Gas Emissions (National Communication on the Implementation of Commitments under the UNFCCC, 1994)

The strengthened Energy Efficiency Centres could provide an institutional basis in each EIT country for greenhouse gas mitigation. They would act as focal points for investors, and could co-ordinate finance (both foreign and domestic) for sustainable energy projects and other greenhouse gas mitigation initiatives. They could also carry out market assessments, demonstration projects, and capacity-building activities. The centres could help match joint implementation projects with donor country companies.

In some countries there may be a reluctance by Ministries, agencies or university departments to support energy efficiency centres. Aid money could provide the financial resources to support the centres. Some EIT countries may not allow the centres to act as a focus for and distribute financial resources to projects. For example, in the Russian Federation, federal and regional or local administration bodies have the lead responsibility for raising and distributing finance for energy efficiency and related greenhouse gas mitigation options. However, even in these countries, the centres could provide policy advice, energy efficiency auditing, information, implementation of energy efficiency projects, and research support.

[16] Saatchi & Saatchi Advertising Kft./AMER (March 1993): "Energy Saving Campaign Monitoring Pre-Campaign Check. Summary of Key Findings", and (June 1993): "Energy Saving Campaign Monitoring. Summary Tables of Pre-/Post-results".

It may take two years to set up new centres or strengthen existing ones. Networking could be implemented in a shorter time-frame. These measures could be replicated in non-Annex I countries. Similar initiatives are already underway in countries such as China, Brazil, India, Palestine, Thailand and South Africa. Information, expertise and advice from these centres and exchanges between Annex I and non-Annex I countries could assist non-Annex I countries.

Training: accreditation and standard qualifications

Context

Technical and engineering expertise in EIT countries is generally very high, but EIT countries may lack expertise in the fields of project finance, investment appraisal and project management. Increased private sector management capacity (for example, for managers of district heating companies) to carry out financial and economic appraisal could create demand for energy efficiency projects. Staff in local banks frequently lack experience in areas such as performance-based contracting and energy efficiency investments. Training and the establishment of recognised 'energy management' qualifications would encourage managers, bank staff and energy sector consultants to improve their skills by attaining the standard recognised certificates.

There are already many training programs in operation. The need for a concerted training effort is widely recognised. The area where common action by Annex I countries could have the greatest impact is in establishing accreditation standards for training. The main targets could be training courses in energy economics, project finance, and project management. The international standing of such qualifications would provide a strong incentive for institutions to offer them and for individuals to try to attain them.

There are many successful bilateral and multilateral training programs. Box 7 gives one example.

Box 7. Energy Efficiency and Business Training for Russian Engineers

An energy efficiency training programme arose out of a working group that was established in 1987 between the UK Energy Efficiency Office and its counterpart in Russia. A number of UK energy efficiency companies wanted to build upon the links they had made in this working group and organised a training programme supported by the UK Know How Fund. A group of Russian engineers trained for thirteen weeks in classroom sessions in the UK. They then received a further thirteen weeks of on-the-job training at the premises of each of the participating UK companies. The first group trained in the UK, then gave the same training to a wider group of 100 engineers in Russia. This programme has been successful, with two caveats:

* The target group for this programme represents a very small fraction of the total potential target group. Unless the mechanisms are in place for further replication across Russia, the overall impact will be small; and
* The timing of training programs must be carefully considered. In Russia, the transition to a market-based economy has been slower than the participants anticipated. The knowledge and experience gained from this programme may dissipate before the Russian economy reaches a state where it can be put to use.

Source: March Consultants, Ltd (1994)

Measures

Annex I Parties could hold a workshop (or workshops) to share information on training programs in energy economics, project finance, economic appraisal and project management. In addition, Annex I Parties could develop accreditation standards for training programs in Annex I countries.

Setting-up accreditation standards will require the participation of all organisations that currently provide training programs. MDB initiatives with local banks would be the main vehicle for training the EIT banking community. Accreditation standards for training courses would be a low-cost measure to ensure that the many training programs taking place across Europe achieve a uniformly high standard. Final agreement on accreditation procedures could take some time. The potential for replication in non-Annex I countries is high. Once an Annex I wide accreditation standard is in place, it could be extended to other regions relatively easily.

Support for energy services companies (ESCOs);

Context

An Energy Service Company (ESCO) provides a range of energy efficiency services to its clients. Typically, the ESCO signs a "performance-based" contract with its client (see Box 8 below), which greatly reduces the risk borne by the client. By offering performance contracts, ESCOs can overcome many of the barriers facing energy efficiency in EIT countries.

Box 8. ESCO Performance Contracts

There are a number of possible configurations for an energy performance-based contract. The two main categories are "guaranteed savings" contracts, and "shared savings" contracts.

Under a guaranteed savings contract, the client enters into two distinct contracts. The first contract is with the ESCO, to whom the client has recourse if the energy savings do not amount to the level guaranteed. The second contract is a full-recourse financing agreement with a financial institution, through which the client pays for the initial cost of the project. Although the ESCO might arrange the financing, it would not normally be party to the financing agreement.

Shared savings contracts are much less common. Under this arrangement, the ESCO finances the installation of the energy saving equipment. The ESCO receives a variable payment from the client based on the level of savings achieved. In a shared saving contract the ESCO assumes the client credit risk rather than a third-party financier. The ESCO must obtain loans secured on the stream of payments that it anticipates receiving from the client. It is difficult for ESCOs to obtain this type of financing. Consequently ESCOs do not favour shared savings contracts.

Box 9. Bulovka Teaching Hospital, Czech Republic

Rising energy prices during the early 1990s, combined with an outmoded heating system, were pushing up the operating costs of the Bulovka Teaching Hospital. Although there was a strong incentive to upgrade the heating system, the hospital lacked the funds to respond to the price signals it was receiving.

The hospital entered into a performance contract with Energy Performance Services Czech Republic (EPS-CR). The contract was to install four energy efficiency measures, saving a total of US$ 700 000 (about 23 per cent of total energy costs) annually. The total cost of the project was US$ 2.7 million.

Long-term debt finance for the project was difficult to obtain at reasonable interest rates. Finance was eventually secured in hard currency, rather than Czech Koruna, under a corporate guarantee from Landis & Gyr. EPS-CR guaranteed that the energy savings throughout the eight-year period of the loan would be sufficient to cover debt service.

Source: USAID (1996) Office of Energy, Environment and Technology.

The extent to which ESCOs have been active in the EIT countries is so far very limited. This is primarily due to the lack of investment funds for ESCO activity. Domestic finance is generally available only over short time-periods and at high interest rates. Loan terms typically do not match the requirements of energy efficiency projects. The relatively small size of individual projects constrains their access to international finance. Other factors that limit the activity of ESCOs in EIT countries are uncertain legal frameworks, and a lack of familiarity with the concept of performance contracting.

Energy market structures that hamper ESCO activity or do not facilitate demand for energy efficiency services are another key barrier for ESCOs. Energy markets in many Annex I countries are being restructured. The type of restructuring that is becoming the norm involves:

- privatisation to remove energy supply from political influence;
- liberalisation to facilitate competition in energy supply; and
- disaggregation of vertically integrated utilities into separate generation, transmission, and distribution functions.

Norway, the United Kingdom, and Chile have taken this type of energy sector restructuring furthest Energy sector restructuring is occurring in many EIT countries, though at greatly varying stages of progress.

In a competitive market, suppliers of energy efficiency services should, in theory, be able to enter the market to provide least-cost energy services to consumers. The competitive market should therefore improve the underlying conditions for cost-effective energy efficiency investments. In practice, however, the optimal level of energy efficiency investment is unlikely to be achieved through competition alone. Some form of government intervention may be required to overcome market failures and lower the barriers to energy efficiency. Barriers to energy efficiency include:

Residual monopolies. Transmission and distribution networks are natural monopolies that require regulatory supervision. Depending on the form of regulation, these businesses may have an incentive to increase the volume of energy transported. It is important to devise regulation of these networks that enhances incentives to save energy.

Residual vertical integration. Energy generation, transmission, or distribution companies may have incentives to increase the volume of energy supplied. The presence of very large retailers with established contacts with all customers also acts as a serious barrier to entry to the energy services companies. It is preferable to eliminate vertical integration between energy retailers and the upstream energy producers and transmission companies, for example, by splitting them into separate companies.

Prices. In competitive markets, energy prices should reflect the cost of energy supply. In OECD countries, competition tends to push energy prices down because monopolistic power to charge high prices is reduced. However, in EIT countries, full-cost pricing will entail removing subsidies and allowing utilities to recover adequate funding for capital stock replacement. Consequently, energy prices are likely to rise when prices reflect costs. Increasing energy prices should increase incentives for energy efficiency. But energy costs already make up 10-20 per cent of household income in many EIT countries. Rapid increases in prices will cause social hardship and are consequently politically difficult to implement. Higher prices could also lead to a higher degree of non-payment of energy bills. It may be more feasible in the short term to develop a clear timetable for gradually increasing prices.[17]

Lack of information. Lack of information on energy consumption of individual households will prevent consumers from responding to price increases. Installing meters in each apartment would facilitate the implementation of future measures to improve the efficiency of energy use. For example, once meters are in place, utilities can charge per unit of energy consumed rather than a flat rate based on floor space. Home-owners would also have incentives to install equipment for modulating heat in flats, and to insulate their buildings.

Conventional barriers to energy efficiency. There is much literature describing barriers to energy efficiency. Many consumers (domestic and commercial) do not have the time, interest or ability to make the necessary life-cycle costing to secure the lowest cost options. They may also not have the capital to make cost-saving investments. Consequently, reliance on newly (and incompletely) liberalised energy markets may not, at least initially, produce an economically efficient outcome. Governments may need to intervene to encourage consumers to make better investment decisions and to encourage intermediaries such as ESCOs to enter the market.

There are many agencies (multilateral, bilateral and consulting firms) involved in energy sector reconstruction and development in EIT countries. The policy advice of MDBs constitutes a *de facto* common approach to energy sector reform. A similar body of conventional wisdom is needed on how to add energy efficiency to such reform. Restructuring major utilities is always a politically charged process. Adding energy efficiency concerns to this process will require high quality guidance. This guidance should provide clear economic justification for energy efficiency measures and should be flexible enough to incorporate measures that are appropriate to different national circumstances.

Many Annex I Party Governments are involved in restructuring energy industries and markets either as implementers, as advisers, or through setting MDB loan conditions. Mechanisms to encourage energy efficiency could be included in energy sector restructuring through regulation of residual monopolies,

[17] A conclusion of the earlier study on "*Financing Energy Efficiency in Countries with Economies in Transition*" was that low energy prices alone should not be a major barrier to energy efficiency in most EIT countries. Many projects are already cost-effective at current energy prices.

removal of vertical integration and barriers to entry, tariffs and metering, economic instruments, and information and labelling. Such measures could enhance ESCO activity.

Measures

Possible measures to support ESCOs in EIT countries are:

- Government use of the performance contracting model. EIT governments could use performance-based contracting to improve the energy efficiency of government buildings and other government activities. This would create a customer base for ESCOs and allow them to begin operation without incurring the initial cost of identifying prospective clients.

- Change public sector spending rules, if necessary: For the performance contracting model to be feasible, governments need to ensure that their public sector spending rules allow recovery of capital expenditure from operational expenditure savings.

- Increase public awareness. Governments can increase other customers' awareness and acceptance of ESCOs by entering into performance contracts with ESCOs for government activities. They could also publicise the results of these ESCO energy efficiency projects. International workshops to share experiences on the operation of ESCOs would help to overcome the initial barrier of unfamiliarity with ESCOs in EIT countries (participants could include the banking community, ESCOs, and industry managers).

- Annex I Party governments could work together through the Annex I Expert Group to exchange information on public awareness campaigns and information programs and so learn from the successes and mistakes of others.

- Recognition by MDBs that energy efficiency performance contracting is a legitimate a form of infrastructure development. As shareholders of the MDBs, Annex I Parties could urge MDBs to make concessionary finance available to ESCOs. ESCOs can act as vehicles for channelling MDB and related private sector finance into energy efficiency.

- Public sector ESCOs. In countries where it is difficult to establish private sector ESCOs, it may be possible to develop a publicly owned ESCO that could be privatised at some point in future. This would enable ESCO activity to begin in those EIT countries that are further behind in the process of transition. Unfortunately, there is not yet any experience of public sector ESCOs, so there is no reliable model to use as a starting point. The EBRD is currently setting up a public sector ESCO in the Ukraine, but it is too early to draw any firm conclusions from this activity. However, public sector ESCOs could be a useful vehicle for securing energy efficiency improvements during the transition to a market-based economy. When the transition is complete, the government could privatise the public sector ESCO. By this time the relevant players would have accumulated significant experience in performance-based contracting.

- Adopt a monitoring and verification protocol. An internationally agreed monitoring and verification protocol would facilitate ESCO activity in EIT countries. This would greatly reduce the transaction costs of negotiating individual performance contracts, and would help to remove some of the perceived risk associated with relatively untested legal systems. The Annex I Parties could agree to adopt and promote an M&V protocol. The North American Energy Monitoring and Verification Protocol (NEMVP), which is the most established

example at present, could be use as a model upon which to base a universally acceptable protocol.

- Standardise offerings: The technical, economic and commercial approach to developing independent power projects is broadly similar wherever the developments take place. There are variations on the shape of the loan syndicate, the power purchase agreement, interest rates and terms, and equity participation, but the main elements of these contracts are familiar and replicable. Standardisation of the form of project agreements reduces transaction costs and fosters understanding for energy supply projects. A similar approach could be taken for energy efficiency projects. Standard contracts would reduce transaction costs, increase familiarity with such projects, and increase their replicability. Standard contracts would also define a common language with which to describe the energy saving investment business. The MDBs could (jointly) develop a small number of contractual models that they seek to apply widely. By concentrating on a small number of models, the offerings would become better known by intermediaries and potential clients. The MDBs could use standard contracts and risk-sharing protocols and an agreed approach to calculating the energy savings from any project. Standardisation would greatly assist the marketing of energy efficiency investment 'products' and help other agencies undertake complementary activities such as capacity-building and co-financing.

Measures by Annex I Party Governments could promote energy efficiency and facilitate the development of ESCOs in newly restructured markets. For example, Annex I Parties could agree, in principle, that energy sector restructuring in their countries should take account of their commitments under the UNFCCC. Alternatively, Annex I Parties could exchange information on 'best practice' policy initiatives for energy sector restructuring to reduce greenhouse gas emissions. Information could be exchanged on regulation of monopolies, removal of vertical integration and barriers to entry for alternative energy suppliers, and tariffs and metering that encourage energy efficiency. Best practice for energy sector restructuring could include:

- Vertical disaggregation of energy suppliers, transmission, and production businesses;

- Elimination of incentives to increase the volume of energy sold. The government could place a revenue cap on local monopoly distribution companies rather than a unit price cap. Distribution companies could also be required to prepare a least cost investment plan (including both supply options and demand side energy efficiency options) to justify the revenue cap;

- Require energy suppliers to offer cost-effective energy-efficient products. This requirement could be placed on local monopoly suppliers, or, in a competitive market, only on the 'supplier of last resort';

- Ensure that electricity grid or oil/gas pipeline charges reflect the benefits of energy efficiency. A Government could set energy tariffs with low (or zero) fixed charges. This would ensure that the cost of energy reflects per unit charges. so that the consumer has both the incentive and the opportunity to reduce their energy costs through energy savings);

- Installation of energy metering and controls in households to allow consumers to respond to price signals;

- Equal taxation on energy and energy-efficient goods;

- Use of economic instruments to reflect "external" costs such as local air pollution and climate change in prices; and

- Advertising and labelling to enable consumers to make informed choices.

These measures would help make markets work more efficiently. Their objective is not to reintroduce regulation and planning. There should be no significant political constraints to these measures and they could be replicated in non-Annex I countries. The greatest potential barrier to the increase in ESCO activity in EIT countries is the slow pace of economic reform in some of those countries. Public sector ESCOs could be a way to avoid this problem. An EBRD initiative on public sector ESCOs for the Ukraine took less than six months to develop. However, the lack of previous experience in the public sector ESCO model means that the feasibility of public sector ESCOs is uncertain.

Redirecting current financial flows

The focus of this section is on measures to re-direct current finance towards energy efficiency investments and to improve the effectiveness of finance flows. Six measures that governments could use to re-direct private sector and official finance towards energy efficiency projects are examined below:

1. Urge Multi-lateral Development Banks (MDBs) to increase energy efficiency activities;

2. Include environmental considerations in export credit agreements;

3. Government guarantees for major energy efficiency projects;

4. Encourage the Environment for Europe Project Preparation Committee (PPC) to support more projects that mitigate greenhouse gas emissions;

5. Set up EIT energy efficiency funds and allowing national environmental funds to be used for energy efficiency projects; and

6. Government procurement programs.

1. Urge MDBs to increase energy efficiency activities;

Context

The MDBs are important players in developing energy using infrastructure in the EIT countries. About one-third of MDB investment could yield substantial energy saving opportunities.[18] Large infrastructure investments provide a good opportunity for MDB staff to collaborate closely with a range of players in the host country, including local banking staff, engineering firms and consultants. Annex I Parties, as shareholders and directors of MDBs (and as borrowers) could strengthen the emphasis MDBs place on energy efficiency.

MDBs provide policy advice to the governments to whom they lend, and could advise governments to link energy efficiency improvements with other investments such as housing privatisation projects. Training

[18] IIEC (1996).

programs for EIT bank staff could improve awareness among the EIT banking community of greenhouse gas-mitigating project opportunities and the role of more innovative financing options. Training in project finance funding and staff exchanges could also be useful. It is not enough for MDBs to simply make money available at a 'window' in a lending institution, perhaps tagged for energy efficiency investments. MDB's need to actively promote their finance and provide support to ensure that the finance is disbursed to projects.

Two measures of the MDBs commitment to energy efficiency are the number of specialised staff (and staff incentives) employed to develop energy efficiency investments, and the targets the MDB has for energy efficiency lending. All the MDBs have created specialist teams to lend to the power and primary energy sectors, but it is rare to find such teams for energy efficiency. Even at the EBRD, which has the greatest concentration of specialised energy efficiency personnel, there are far more staff resources devoted to power supply and utilities lending than to energy efficiency. In EIT countries, the cost-effective potential for energy efficiency investment is considerably greater than new power requirements. There are efforts underway to address this, but MDBs could place greater emphasis on energy efficiency.

The MDBs finance large scale developments whose primary purpose is not energy supply but that they consume large quantities of energy. The EBRD's Environmental Appraisal Unit screens all investments for their environmental impact. For any investment involving significant energy consumption, the Environmental Appraisal Unit initiates a meeting with the Energy Efficiency Team and the project team to examine the energy-saving potential. For example, a water project can make use of energy efficient pumps which are more expensive up-front but cheaper when energy savings are taken into account. The effectiveness of such a process depends on how thorough the analysis is, and on the type of alternative investments that the MDB and its client are prepared to consider. Box 10 below gives an example of an MDB energy efficiency project in Russia.

Box 10. GEF energy efficiency project in Russia

In 1996 The Global Environment Facility (GEF) approved a $4.28 million project to reduce barriers to energy efficiency improvements in Russian residential buildings and heat supply. The GEF contribution was $2.98 million, and the Russian government is contributing $1.3 million. The project has also attracted significant financial support from local participants and a wide range of other donors. This funding will support major World Bank investment programs in residential housing refurbishment and efficiency ($300 million for 6 cities), other World Bank initiatives ($60 million gas distribution refurbishment and energy efficiency loan), and a range of initiatives by US AID, EU TACIS and a Dutch bilateral aid programme to increase efficiency in district heating and gas distribution. The project has four components:

1. Prototype heat and hot water metering and billing systems;
2. Autonomous (decentralised) heat production in residential and public buildings;
3. Assistance for energy efficiency project analysis and feasibility studies;
4. Institutional support and monitoring.

The project takes advantage of opportunities to upgrade and improve the energy efficiency performance of apartment blocks as they are being privatised. This is a good example of energy efficiency initiatives working in tandem with the development and implementation of other projects. The expected benefits are 5-20 per cent reductions in heat demand in apartments that are being privatised. The project could yield up to 30 per cent reductions in heat demand in non-privatised apartment blocks, and 5-15 per cent reductions in distribution line losses for district heating companies. For the gas distribution and related energy efficiency loan component of the overall project, the savings are estimated to be 1 200 000 tons CO_2/year. If successful, this approach could be replicated in other EIT countries.

MDB initiatives that would help to secure greater investment in cost-effective energy efficiency measures are:

- Assess and invest in least-cost energy investment;
- Screen all loans for energy efficiency impact;
- Factor environmental costs in analysis;
- All resource bidding

Some MDBs have already embarked on some of these initiatives, and there are positive developments underway in all the MDBs.

Measures

As shareholders and directors of the MDBs, the Annex I Parties could urge MDBs to intensify their efforts, broaden the scope of their energy efficiency initiatives and entrench them as core activities. Specific actions that Annex I Parties could urge MDBs to take are:

1. Least-cost energy investment: Because MDBs do not at present compare both energy efficiency and energy supply options, there is more investment in supply side options than is economically optimal.

- Assessments of the potential for cost-effective demand-side measures would give both MDBs and EIT governments information on all energy investment options. This is particularly important when governments and MDBs are considering financing for supply side investments.
- Annex I governments could urge MDBs to perform 'economic due diligence'. This would involve assessment of both energy supply and energy efficiency options on all energy sector investments to ensure that funds are channelled to the least cost options.

2. Screen all MDB loans for energy efficiency potential:

- Annex I governments could urge MDBs to set up Energy Efficiency Units.
- Annex I governments could urge MDBs to screen all investments to ensure that such developments use energy-efficient technologies if they are cost-effective.

3. Factor environmental costs and market failure into investment appraisals: Environmental and economic arguments can be made in favour of energy saving over energy supply even if they have similar economic internal rates of return. Environmental externalities is one justification. Another justification is that in many EIT countries, heat and electricity prices remain below the cost of supply. The economic value of energy efficiency investments to the country is based on the opportunity costs of resources in the economy, rather than the pricing of the resources. However, abnormally low energy prices make it more difficult for investors to recover the cost of their investment.

- *Concessionary finance rates for energy efficiency that reflect full cost of energy*. Annex I Parties could urge MDBs to use concessionary finance at lower interest rates to support energy efficiency investments.

- *Shadow carbon taxes:* An approach that the World Bank is currently investigating is to include shadow carbon taxes to factor in the environmental costs of carbon dioxide emissions when they appraise investments.

4. All resource bidding: Currently, energy efficiency options may be least-cost, but the terms of MDB tenders prevent them from being considered. Under all resource bidding, the requirements would have to be specified in terms of energy services, rather than amounts of energy or energy capacity. Bids that include demand-side investment and combined heat and power would be allowed.

- *The MDBs should use 'all resource bidding'* for energy sector tenders to ensure that their procurement and tendering process in the energy sector does not preclude energy efficiency.

5. Training and awareness raising: Annex I Parties could urge MDBs to include training programs and staff exchanges for bank staff in lending programs. Training could improve their awareness of energy efficiency project opportunities, and of the role of innovative financing options in EIT countries.

These measures would not increase financial burdens, and some are already being considered in MDBs. Energy efficiency programs could be 'piggy-backed' onto all major MDB-financed investments in energy-using infrastructure, at relatively little incremental cost. This measure would require changes to existing MDB 'best practice' documentation and could be implemented within a short time-frame. These measures would be equally relevant in MDB policy for non-Annex I countries.

2. Environmental considerations in export credit agreements

Context

Nearly all developed countries have Export Credit Agencies which provide government support for export of goods or projects. Export credit support can be through direct loans to buyers of domestic goods; or guarantees for exporters against non-repayment. About half of the Members of the OECD Export Credit Group consider the environmental impact of the projects they are asked to support. However, the extent of analysis undertaken on environmental impacts varies widely (TD/ECG(95)1; TD/ECG(95)4; TD/ECG(96)7).

Some OECD countries have brought a number of proposals to the OECD Export Credit Group. These countries have sought the Group's agreement that official export credit agencies would provide support for these projects by any Export Credit Agency, unless certain environmentally friendly technologies were used. However, some countries consider that it is not appropriate to use export credits to impose environmental standards on recipient countries. Members of the OECD Export Credits and Credit Guarantees Group have recently considered the possibility of establishing an information network exchange on the issue of export credits and the environment.

Measure

Through the OECD Export Credits and Credit Guarantees Group, OECD governments could encourage Export Credit Agencies to take account of environmental considerations when deciding whether to provide official support for projects. They could also ask the agencies to provide information on the environmental impact of the projects they support.

3. Government guarantees for major energy efficiency projects

Context

Financiers must assess the risks facing their project or venture that could jeopardise some or all of the expected revenues. If the risks are high, the investor may seek a high rate of return or a short term, or may be reluctant to invest at all. The risks involved could include:

- Default, insolvency, late payment of clients, intermediaries or local partners;
- Non-performance of government contractual obligations;
- Changes in the law or government policies (e.g. energy tariffs);
- Foreign exchange 'transfer' risks;
- Non-payment of later maturities in a financing package;
- 'Force majeure' events such as war;
- Market risks - the demand may be less than expected.

These risks are beyond those associated with the project failing due to technical or implementation problems. Guarantees provided by EIT governments, export credit agencies, or MDBs can offset risks that are outside the control of the project developers. A guarantee is usually offered as a form of insurance. The guarantor agrees to reimburse the project developer in the event of failure due to one of the insured risks. The market for independent power projects has been facilitated greatly by the availability of a range of guarantees and commitments. Many of these ideas could apply to energy saving investments.

The provision of guarantees is always a matter of negotiation between the contracting parties. The actions of governments should attempt to maximise the risk bearing capabilities of the private capital market. Government action should not attempt to replace this private sector function.

Measures

Measures that EIT governments could take include:

1. Sovereign guarantees: It is common practice for EIT governments to provide 'sovereign' guarantees for energy supply or other infrastructure projects where the state is the borrower. A variation on this approach is for the government to guarantee to repay a loan to a third party. This model is being developed for 'Ukresco' in partnership with the EBRD - the Government of Ukraine is guaranteeing to repay a loan to a special purpose ESCO established by the State Committee for Energy Conservation. EIT governments could use this approach for large scale energy efficiency projects. Possible projects

could include metering, district heating rehabilitation, boiler and CHP replacements, and supply-side efficiency programs such as transformer upgrades.

2. Underwriting municipality borrowing: EIT governments could guarantee that loans made to municipalities will be repaid. This would enhance the creditworthiness of municipalities and facilitate private finance and MDB lending. An EIT government could use its own administrative processes to recover costs from a defaulting municipality.

3. 'Power saving agreement': Energy efficiency could be financed under Power Saving Agreements in the same way that independent power projects are currently financed under Power Purchase Agreements.[19] A government could establish a market of a particular size for energy efficiency and call for tenders from energy efficiency suppliers to provide energy efficiency services at least cost. The government could provide a guaranteed market for energy efficiency by requiring electric utilities to buy the energy saved (since energy saved is a form of energy supply).

4. 'Tariff agreement': EIT governments could guarantee a particular evolution of tariffs (and therefore the value of energy savings). This guarantee would remove one aspect of 'regulatory risk'. If the government does not introduce a particular tariff increase at the level or time guaranteed, the government would agree to compensate the project developers or clients if this caused them a loss.

5. Equity participation: EIT governments could capitalise one or more ESCOs and sub-contract management of the ESCO/s to the private sector. The risk exposure of the private sector franchise holders would be limited to their participation. Once an ESCO company was well established it could be a candidate for privatisation.

6. Exchange rate agreements: EIT governments could facilitate exchange rate risk management by establishing hedging markets and articulating clear exchange rate policies.

7. Annex I governments could encourage MDBs to tailor current guarantee instruments to support energy efficiency investment. The MDBs already offer a range of guarantees whose aim is to mobilise private capital. MDBs have developed these techniques and used them extensively for independent power projects. An increasingly important role for MDBs is to create financial instruments that mobilise private capital, rather than simply providing capital themselves. For example, a World Bank *partial risk guarantee* insures developers using private finance against governments failing to meet their commitments, or 'force majeure' events. The developer pays a premium for the guarantee and an additional fee if the guarantee is invoked. A World Bank *partial credit guarantee* lengthens the term of a private finance loan by guaranteeing repayment of later maturities. This type of guarantee can provide an incentive for lenders to roll over short term loans. These forms of guarantee could be particularly important for supporting energy efficiency investments in municipalities and the still very extensive public sector within EIT countries. Such instruments require some form of borrower government guarantee.

8. A Working Group to research forms of guarantee needed for energy efficiency: The development of guarantee mechanisms tailored to energy efficiency is an intricate process. The Annex I Expert Group

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[19] Under a Power Purchase Agreement, electric utilities may be required to purchase a certain amount of electricity from, for example from independent power producers producing electricity from renewable sources of energy or from co-generation. Examples are the United States Public Utility Regulatory Policies Act, 1978, under which electric utilities are required to purchase power produced by facilities meeting certain qualifying criteria, or the United Kingdom's non fossil fuel obligation - NFFO).

could establish a working group of bankers, ESCO staff, and EIT officials. The working group could investigate how the particular needs of energy efficiency developers could be met by guarantees such as those used for power supply projects. The Energy Efficiency Centres could organise the research and development of guarantee offerings.

9. Disseminate experience: EIT countries could negotiate guarantees for their energy efficiency projects. This experience could then be disseminated more widely so that it could be used for other projects and in other countries.

10. A feasibility study and seminar for EIT officials, bankers and developers. In October 1996, the European Commission DGXII hosted a seminar on mobilising finance for energy efficiency. At this seminar, bankers, developers and government officials discussed the conditions required to promote and finance energy efficiency. The Commission indicated its intention to continue this process. The Annex I Expert Group could work with the Commission on a seminar to explore the financial conditions for energy efficiency in EIT countries.

11. Standardisation of guarantees: Transaction costs would be reduced for potential investors, developers and MDBs who wish to operate in many EIT countries simultaneously if the types of guarantees available were similar in each country. Standard guarantee offerings would reduce costs to investors and improve the cost-effectiveness of energy efficiency projects.

The main barrier to these measures may be the willingness of EIT governments to provide guarantees or to underwrite markets that they are attempting to privatise or liberalise. The bodies responsible for inward investment in EIT countries (for example PAIZ in Poland) may be reluctant to see guarantees developed for one sector of the economy but not others. The arguments for providing guarantees to energy efficiency developers would be applicable to companies wishing to undertake any investments in EIT countries. This concern could be overcome by referring to the guarantees offered to power producers, and by charging insurance premiums for covering risks. These measures would have no adverse impacts on non-participating countries and could be replicated with favourable results.

4. Environment for Europe and the Project preparation committee

Context

UNECE countries in the Environment for Europe process established the PPC in recognition of the need to draw on multiple sources of finance for energy and environmental projects. The Project Preparation Committee puts together syndicates of funders (e.g. MDBs, bilateral, national funds and the private sector for suitable energy and environmental projects.

Box 11. Members of the PPC

Countries: Austria, Denmark, Finland, France, Germany, Netherlands, Norway, Sweden, Switzerland, United Kingdom, United States of America

International Organisations: European Commission (Tacis, Phare), EBRD, European Investment Bank, International Finance Corporation, Nordic Environmental Council (NEFCO), World Bank (IBRD and IDA).

Observers: Japan, the EAP Taskforce, GEF, UNDP

Source: PPC Report to the Third Ministerial Conference "Environment for Europe" in Sofia, October 1995, p4

The priorities of the EAP determine which projects the PPC considers as candidates for matching donor funds with projects. Energy efficiency is an essential component of any programme that aims to tackle environmental problems cost-effectively, but this is not at present explicitly recognised in the EAP mandate. The set of projects from which PPC officers can select for matching with funds is determined largely by the portfolios of the IFIs (although some donors also bring projects to the PPC). An earlier section of this report discusses measures which Annex I Parties can take to increase the focus of IFIs on energy efficiency.

Box 12. The Project Preparation Committee

The Project Preparation Committee (PPC) was set up following the adoption of the Environmental Action Plan for Central and Eastern Europe (EAP) at the Lucerne 'Environment for Europe' conference in 1993. It is a networking mechanism involving donors and international financing institutions (IFIs), which co-ordinates and facilitates the financing of environmental investment projects in central and eastern Europe and the Commonwealth of Independent States.

The PPC is not a fund: PPC officers may help to identify and approach possible sources of funding but do not themselves have direct access to funding. In a typical PPC project, a project proponent will already work together with an IFI or a donor, but requires the involvement of a third party (donor or IFI) to enable project development. Therefore, the normal routing of a project through the PPC is via one of its members, i.e. an IFI or a donor.

The PPC does not review project proposals itself, but facilitates by bringing together donors and IFIs ('matching') when the project concept has already been established. Occasionally, the PPC will advise in the early stages of project preparation, when no IFI or donor is yet involved. Matching takes place through PPC meetings twice a year, and through the informal networking of PPC officers throughout the year. A third mechanism is through donor meetings for specific regions or sectors. The PPC Secretariat is located at the European Bank for Reconstruction and Development (EBRD). PPC Officers are working both at the World Bank and the EBRD.

Source: Koen Peters, PPC, EBRD

The priorities of the EAP determine which projects the PPC considers as candidates for matching donor funds with projects. Energy efficiency is an essential component of any programme that aims to tackle environmental problems cost-effectively, but this is not at present explicitly recognised in the EAP mandate. The set of projects from which PPC officers can select for matching with funds is determined largely by the portfolios of the IFIs (although some donors also bring projects to the PPC). An earlier section of this report discusses measures which Annex I Parties can take to increase the focus of IFIs on energy efficiency.

Measures

1. Stronger emphasis on energy efficiency by the PPC. Annex I Parties that are members of the PPC (see Box 12 below) could encourage the PPC to try to match more projects with energy efficiency components.

2. Stronger emphasis on energy efficiency in the Environment for Europe process. Annex I countries that participate in the Environment for Europe process could seek to ensure that energy efficiency is included

in the EAP mandate explicitly.[20] They could place this issue on the agenda of the Fourth Environment for Europe Conference at Aarhus in May 1998.

3. Guidebook on available funds. Annex I Parties that are members of the PPC could request the PPC to develop a guide to all available funds and their purpose, standard terms, and contact details for PPC staff.

5. Energy efficiency and environmental funds

Context

In many Annex I countries, environmental funds (often raised from pollution taxes) contain substantial sums of money that is available for investment in cleaner technologies and environmental projects. For example, 20 per cent of the revenue raised from Denmark's carbon tax is available in the form of grants of up to 30 per cent of the cost of energy efficiency investments.[21] Funds such as this one specifically allow energy efficiency and renewable energy technologies to be financed. However, many general environmental funds do not make energy efficiency a priority and have, to date, been used mainly to support ecosystem renewal, wetland management, forestry projects etc.

Measures

1. Establish energy efficiency funds: EIT governments who have not yet done so could establish energy efficiency funds, or ensure that energy efficiency and renewable energy projects are eligible for funding from existing environment funds. Energy efficiency institutes in EIT countries could help to promote energy efficiency as a legitimate target for environmental funds.

2. Publicise the use of environmental funds for energy efficiency purposes. Publicising the fact that projects and technologies with lower greenhouse gas impacts are given a high priority within environment funds would help to increase the demand for such technologies in EIT countries.

3. Debt-for-environment swaps: Annex I Parties that have lent money to EIT countries could agree to undertake debt-for-environment swaps. The forgiven debts could be used to establish energy efficiency funds, or added to environmental funds (that should lend to energy efficiency projects as well as other environmental projects).[22] A number of debt-for-environment swaps have taken place on a bilateral basis. There would be added benefits if a number of Annex I Parties took this action collectively. The size of the funds available would be larger, which would allow more lending and greater flexibility in the financing options offered (such as revolving funds). In addition, forgiven debt is more likely to be politically acceptable within creditor nations if they agree to take such action collectively.

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[20] UNECE countries that are listed in Annex I to the UNFCCC are: Austria, Belarus, Belgium, Bulgaria, Canada, Croatia (which is not listed in Annex I but has acceded to Annex I commitments), the Czech Republic, Slovakia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romaina, Russian Federation, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, and United States.

[21] Danish Energy Agency; *Energy 21- The Danish Government's Action Plan for Energy.* June, 1996.

[22] Poland's EcoFund uses forgiven debt from the United States, Switzerland and France, amounting to a total of $460 million, to finance environmental projects. If all seventeen creditor countries agreed to similar action, the total fund could be as large as $3 billion.

4. Optimum use of existing funds: Annex I Parties could request MDBs and energy NGOs to work with fund managers to design financing mechanisms that make optimum use of the funds created.

Box 13. Environmental Funds

There are already many environmental funds in EIT countries, some of which already support, or could support, energy efficiency projects. For example:

- ***Czech Energy Agency*** - manages a small fund to finance demonstration projects to reduce fuel and energy consumption in apartments, schools, hospitals and other municipal buildings.
- ***Czech State Environmental Fund*** - recycles money raised from pollution fees and fines. It finances 2000 projects per year, but includes very few energy efficiency projects at present.
- ***Poland's EcoFund*** - was established with capital from forgiven loans which becomes available over 18 years. The fund actively looks for long-term projects that otherwise are not commercial with the objective of promoting innovative technology. Few energy efficiency projects have been supported to date, but the number is increasing.
- ***Poland's National Agency for Energy Conservation (PKT)*** - PKT has an initial budget of $75 million for efficiency projects and can offer grants, loans, and a blending of the two. Initially the PKT will look for projects with a payback of less than 1.5 years, but if successful, this pay-back period may be extended.
- ***Poland's National Fund for Environmental Protection (NEF)*** - the total amount available in 1995 was $255 million, some of which is available for energy efficiency projects. NEF can offer loans with interest rates at between 20-80 per cent of the National Bank rate.
- ***Slovak Environmental Funds*** - has no energy efficiency projects to date, though funds are available for this purpose.
- ***Bos Bank,*** Poland's Environmental Protection Bank lends for environmental improvement projects and distributes money from the National Environmental Fund. Bos Bank is working with the IIEC and the EBRD to structure limited recourse financing facilities for energy savings investments. Bos Bank has financed an energy efficient lighting programme for the municipality of Wroclaw. Originally, this had been identified as a candidate for a municipal bond issue.

6. Government procurement programs

Context

Effective action to mobilise finance into energy efficiency can also be taken by clients on the demand-side of transactions. The larger the size of the commercial transactions involved, the lower the unit production and transaction costs will be. Increased demand for energy efficient technologies and services would help to create a more attractive market for suppliers. Government owned buildings and activities in all EIT countries (and elsewhere) consume substantial amounts of energy. Government procurement of energy efficiency technology and services could create a sufficiently attractive level of demand to persuade entrepreneurs to enter the market to supply energy-efficient products and services. For example, if thirty schools in Poland undertook joint procurement of co-generation plants, lighting and weatherisation, the transaction would be much more attractive and cost much less for all involved.

National, regional and local governments have significant purchasing power and can stimulate markets by guaranteeing certain levels of sales. Government purchasing programs enable manufacturers to reduce costs by increasing product runs and sales volumes, and the certainty they provide enables manufacturers to further invest in and market the technology.

Government procurement programs have been undertaken unilaterally by many OECD countries. For example, the effectiveness of the United States 'Energy Star' labels for computers was greatly increased in 1993 when the United States government specified that all future United States government computer purchases had to meet the 'Energy Star' criteria. This purchasing policy has lead the Energy Star criteria to become the de facto standard for computers world-wide because the United States government is the world's largest individual computer purchaser. There are three reasons to support common action on government procurement:

i. *Trade barriers*. Government procurement programs that are designed to favour domestic producers could form trade barriers that may contravene World Trade Organisation (WTO) rules. Specification or 'accreditation' of such schemes by the UNFCCC Parties, or rules and guidance on design, would reduce possible conflicts with WTO rules.

ii. *Aggregation*. If similar programs were implemented in several countries, the market would become larger. Standardising government procurement programs would facilitate MDB involvement.

iii. *Lower cost*. By drawing on the experience of other countries, costs of programme design and implementation could be reduced and the effectiveness of the programs could be increased.

Measures

1. National energy efficiency government procurement programs. Annex I Parties could introduce national procurement programs unilaterally or according to agreed guidelines. Bilateral aid could be used to design and implement procurement programs in EIT countries. MDBs could channel their finance to such programs through local EIT banks. Where MDBs have financed credit lines for energy efficiency, the local EIT intermediary banks could target their marketing towards financing the purchase of products under common procurement or leasing schemes by suppliers.

2. Collaboration to create 'mega-markets'. EIT and other Annex I Party governments could co-ordinate their public sector procurement programs. The Annex I Expert Group or the OECD/IEA could create guidelines, arrange agreements on procurement programs among countries, and disseminate information on best practice. Agreement on 'accreditation' of procurement programs could be sought from the WTO.

3. Private sector 'technology transfer' programs: Annex I party governments could create and sponsor private sector "technology transfer" programs based on government procurement policies. Under such a programme, private sector companies or trade associations would agree to join or form a buyers' pool for products covered by government procurement policies. The buyers' pool could secure a larger volume of the products at lower prices and perhaps higher quality than if they operated individually. Such programs could be used for procurement of many energy-efficient products, but would be most successful for products that are fairly homogeneous, such as bulbs, motors, transformers, appliances, and office equipment.

4. Publicise procurement opportunities

5. Build energy efficiency into procurement: Investments made by MDBs involve purchase of energy-using capital goods - especially drive motors and other industrial equipment, transformers, buildings, vehicles. If MDBs followed high self-imposed energy efficiency standards, they would build low life-cycle cost products into their projects. Given that this is a more complicated task than comparing

purchase costs, benchmarks, rules of thumb and technical standards would reduce the costs of making this assessment for every investment.

These measures would complement efforts to improve the flow of finance and enhance the capacities of the lenders, intermediaries, and suppliers of energy efficiency, by increasing demand for energy efficiency products. Shaping the market on the demand-side (i.e. the customers for energy efficiency), will help overcome the barriers to cost-effective energy efficiency projects that arise from their small scale and disparate nature. Energy efficiency currently faces the same problems that conventional energy suppliers would face if there were no distributors, aggregators and supply grids. By aggregating energy efficiency demands, the equivalent demand-side 'infrastructure' is created. The clients improve their purchasing power and the potential energy efficiency suppliers see less risk and face lower entry costs. These measures could be replicated in non-Annex I countries, but even without such replication, the beneficial impact of the measures on non-Annex I countries could be very large. The stimulus to the world market for energy efficiency products and services that these measures would provide should result in increased availability and lower prices. The significant positive externality associated with the measures should benefit all countries.

CONCLUSIONS

This study has identified many measures that Annex I Parties could consider taking to improve finance flows to greenhouse gas mitigation projects in EIT countries have been proposed in this study. Capacity-building in EIT countries could help to overcome information and motivation barriers. Capacity-building could also help to create a business climate that is attractive to foreign investors and facilitate technology transfer. Possible measures identified in this study to build capacity are:

- Energy efficiency centres to reinforce or replace the existing Energy Centres (funded by the European Union), most of which are to close soon. These centres could be focal points for market assessments, training, information and publicity, demonstration projects, and financing schemes. A regional "virtual" centre using the internet could supplement these centres.

- Public awareness initiatives such as promotional material raises public awareness; workshops and information-sharing on public awareness programs by Annex I governments.

- Annex I Parties could establish accreditation and standard qualifications for training initiatives by a wide variety of bodies - bilateral, local universities, professional associations.

- Support for energy services companies (ESCOs). Some of the specific measures identified to achieve this are: use of "performance contracts" by EIT governments; a common energy saving measurement protocol; and development of standard ESCO contracts and financing mechanisms.

- Annex I Parties could urge MDBs to make concessionary finance available to ESCOs which can act as vehicles for channelling MDB and related private sector finance into energy efficiency ESCOs. In countries where it is difficult to establish private sector ESCOs, it may be possible to develop a publicly owned ESCO that the government could privatise at some point in future. This would enable ESCO activity to begin in those EIT countries that are further behind in the process of transition.

- Annex I Parties could agree in principle that energy sector restructuring in their countries should take account of their commitments under the UNFCCC. Alternatively, Annex I Parties could exchange information on 'best practice' policy initiatives for energy sector restructuring to reduce greenhouse gas emissions. For example, information could be exchanged on regulation of monopolies, removal of vertical integration, and barriers to entry for alternative energy suppliers, and tariffs and metering that encourage energy efficiency.

Measures to re-direct private sector finance towards energy efficiency and other investments that mitigate greenhouse gases are given emphasis in this study because private investment flows are a huge potential source of funding, if EIT countries can attract them. The private sector potentially has an important role to play in international finance for energy efficiency investments in EIT countries. Donor governments can adjust their own spending priorities in aid plans and through official support provided to their exporters, but can only indirectly influence the potentially vast pool of private sector finance.

Aid flows are not increasing significantly, and so it is also important to maximise the effectiveness of existing government finance. Measures identified in this study that could help to redirect current financial flows are:

- Annex I Parties, as shareholders, directors and borrowers could urge MDBs to improve their contribution to greenhouse gas mitigation. Annex I Parties could ask MDBs to: undertake project screening for energy efficiency opportunities; offer co-financing and concessionary finance for energy efficiency; disseminate policy advice; build capacity both within MDBs and in EIT countries; and use investment appraisal techniques that reflect greenhouse gas externalities. It is not enough for MDBs to simply make money available at a 'window' in a lending institution; they need to actively promote their finance to ensure that EIT banks are able to disburse it to projects.

- OECD Member countries' governments could encourage the OECD Export Credits and Credit Guarantees Group to agree that Export Credit Agencies should take account of environmental considerations when deciding whether to provide official support for projects. OECD Member countries could also encourage the Group to agree that Export Credit Agencies should provide information on the environmental impact of the projects they support.

- EIT governments could consider providing guarantees for energy efficiency projects, which could help investors by sharing project risks, extending the length ("term") of a loan, or increasing the equity participation in well-capitalised ESCOs. Government guarantees could also enable EIT governments to link efficiency improvements to investments supported by such guarantees, such as house building and renovation, industrial restructuring.

- Annex I Parties that are members of the Project Preparation Committee could encourage the Committee to support more energy efficiency projects.

- EIT governments could establish domestic energy efficiency funds, and encourage greater use of national environmental funds for energy efficiency projects.

- Annex I government procurement programs could stimulate markets for energy efficiency. Governments, bilateral aid agencies and MDBs could facilitate the creation of buyers' pools in the private sector. Aggregating energy efficiency investments into larger transactions can reduce transaction costs and help to create a more attractive market for suppliers of energy efficient technologies and services.

Many of the most important measures to attract foreign investors are measures that can only be taken by EIT governments. These include reforming macro-economic policy frameworks, reforming energy market structures and pricing, banking reform, debt recovery programs, stronger fiscal discipline, and legislation to provide a supportive commercial and legal framework for investment including judicial institutions and enforcement mechanisms. These are difficult tasks that often involve lengthy political processes and that will take time to implement.

The most politically feasible (and hence realistic) measures to improve energy efficiency financing will be those that are in line with domestic priorities in Annex I countries (both EIT and non-EIT). For example, many EIT countries in central and eastern Europe, place high priority on "approximation" of domestic policies to bring them closer to European Union policies. EIT countries also place high priority on energy security and reduction of local air pollution. Improving finance for energy efficiency investments would facilitate progress towards all three of these priorities. Similarly, in OECD donor countries, enhanced investment opportunities in EIT countries that have beneficial impact on domestic growth are more likely to find favour and funding.

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GLOSSARY

CFLs	Compact Fluorescent Lightbulbs
COP	Conference of the Parties
CTI	Climate Technology Initiative
DEA	Danish Energy Agency
NGO	Non-government Organisations
EAP	Environmental Action Programme
ETSU	United Kingdom Energy Technology Support Unit
N-EAP	National Environmental Action Plan
PPC	Project Preparation Committee
EBRD	European Bank for Reconstruction and Development
EC	European Community
EIT	Countries that are undergoing the process of transition to a market economy
EMDB	Emerging Markets Database
ENR	European Energy Network
ESCO	Energy servicing company
EU	European Union
FCCC	United Nations Framework Convention on Climate Change
FDI	Foreign direct investment
GEF	Global Environmental Fund
IIEC	International Institute for Energy Conservation
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IEA	International Energy Agency
IFC	International Finance Corporation
IFI	International Financial Institutions
IMF	International Monetary Fund
NEMVP	North American Energy Monitoring and Verification Protocol
NOVEM	Netherlands Agency for Energy and Environment
NUTEK	Swedish National Board for Industrial and Technical Development
MDB	Multilateral Development Banks
OECD	Organisation for Economic Co-operation and Development
PHARE	EU Programme of Support for Economic Restructuring in Central and Eastern Europe
SYNERGY	Programme for Community Countries in the Energy Field
TACIS	EU Programme for Technical Assistance to Newly Independent States and Mongolia
THERMIE	Demonstration Component of an EU Energy Programme
UNEP	United Nations Environment Programme
USAID	Unites States Agency for International Development
VAT	Value Added Tax
WB	World Bank
WTO	World Trade Organisation