

**EFFECTIVE FINANCING OF ENVIRONMENTALLY  
SUSTAINABLE DEVELOPMENT IN EASTERN EUROPE  
AND CENTRAL ASIA**

**by**

**Theodore Panayotou**

**Harvard Institute for International Development  
One Eliot Street, Cambridge, MA 02138  
Tel: 617-495-9173, Fax: 617-496-3956**

**Prepared for presentation at the Third Annual World Bank Conference on  
"Effective Financing of Environmentally Sustainable Development," Washington,  
D.C., October 4-6, 1995.**



INTRODUCTION.....	1
THE UNDERINVESTMENT EQUILIBRIUM: PERCEIVED NEEDS VERSUS EFFECTIVE DEMAND .....	2
REDUCING FINANCING NEEDS AND EXPANDING FINANCIAL RESOURCES .....	3
OPPORTUNITIES OFFERED BY TRANSITION FOR FINANCING ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT .....	9
TRANSITIONAL CONSTRAINTS TO EFFECTIVE FINANCING OF ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT .....	12
INNOVATIVE INSTITUTIONS AND MECHANISMS OF ENVIRONMENTAL FINANCING IN TRANSITIONAL ECONOMIES .....	13
The Polish National Fund: Financing Environmental Protection Through Earmarked Fees and Charges. ....	14
Financing Municipal Environmental Infrastructure: A USAID-Czech Republic Partnership.....	16
Partnership for Energy Conversion in Bulgaria: The Stara Zagora Gasification Project .....	17
The Slovak Environmental Revolving Fund: In Search of Financial Sustainability .....	17
The Polish Ecofund: An Innovative Co-Financing Mechanism for Transboundary and Global Problems .....	19
Incentive-based Environmental Financing: Developing Emissions Trading in Almaty, Kazakhstan. ....	20
AN ASSESSMENT: TEMPORARY PALLIATIVES VS. SYSTEMIC REFORMS.....	22
TEN POLICY LESSONS FOR EFFECTIVE LONG-TERM FINANCING OF SUSTAINABLE DEVELOPMENT .....	25
CONCLUSION .....	29
REFERENCES.....	30

# **EFFECTIVE FINANCING OF ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT IN EASTERN EUROPE AND CENTRAL ASIA**

by

**Theodore Panayotou\***  
**Harvard Institute for International Development**

## **INTRODUCTION**

Ever since the concept of sustainable development was articulated and received worldwide endorsement, the gap between perceived need for action (demand) and its effective financing (supply) has been growing ever wider. In no other geographic area has this gap been greater than in Eastern Europe and Central Asia where decades of mismanagement of the economy and subsidization of resource use and environmental degradation have left colossal needs and meager resources. The region's efforts to accomplish simultaneous economic and environmental recovery creates unprecedented challenges, but it also offers unique opportunities as well as lessons to other countries on ways to effectively finance sustainable development under conditions of severe financial constraints.

The objectives of this paper are fourfold: 1) to assess the dimensions of the true financing gap for environmental investments in Eastern Europe and Central Asia; 2) to identify and analyze the opportunities and constraints to environmental investments presented by the transition process from a centrally-planned to a market economy; 3) to describe and assess selected institutions, mechanisms, and partnerships employed in the region to mobilize additional financing as well as to use existing resources more effectively; and 4) to examine alternative approaches to effective financing of sustainable development in Eastern Europe and Central Asia (and elsewhere), which emphasize the importance of policy change, institutional development and mitigation of market failure. Furthermore, effective financing calls for clarification of the relative roles of the public and private sectors and division of labor as well as creative partnerships between them.

---

\* Institute Fellow and Director of the International Environment Program of the Harvard Institute for International Development.

Prioritization of needs to “maximize” benefits and the appraisal of projects to “minimize” costs are just as essential.

### **THE UNDERINVESTMENT EQUILIBRIUM: PERCEIVED NEEDS VERSUS EFFECTIVE DEMAND**

The disintegration of the centrally planned economies of Eastern Europe and Central Asia has brought into the open levels of environmental degradation and resource depletion that rival those of the region’s economic mismanagement. Hazardous waste sites in residential areas, smoke-choked cities, and high rates of pollution-related morbidity and mortality have shaped perceptions and even estimates of needed clean ups and of environmental infrastructure of unprecedented levels. For example, earlier estimates of the needed expenditure for clean up of the most contaminated sites in Poland exceeded the country’s GNP. The fact that the environment was a rallying point for the descent, and ultimately the uprising, against the communist regimes has shaped the expectation that the “needed” levels of funding would be forthcoming from a public with high unmet demand and hence, willingness to pay for environmental improvements. Any shortfall in financing was expected to be met by international financial institutions, as well as by bilateral and multilateral assistance.

Initial enthusiasm and high hopes were to be replaced by frustration, as both the public’s willingness to pay and the outside world’s willingness to finance environmental investment in the region fell far short of the expectations. Soon after the collapse of the socialist regimes, environmental concerns declined precipitously as a priority because of the fall in production and incomes and because of the emergence of new economic and social priorities (e.g. unemployment, risk of job loss, quick profit). For example, in the former Czechoslovakia, only 14 percent of the citizens identified the environment as a priority in 1992, compared with 83 percent two years earlier, while NGO membership throughout Central and Eastern Europe is reported to be falling (Esty et al. 1992). A combination of modest (and in many cases, declining) incomes and low environmental awareness translated into a low willingness to pay and low political support for public environmental investment. Since environmental investment needs were assessed according to physical indicators of environmental degradation, and independently of the expected benefits (and hence, the public’s willingness to pay) the perceived needs or nominal demand remained high, even as the willingness to pay and hence, effective demand for environmental investments declined. Meanwhile, significant reductions in

current pollution levels took place initially as a result of output decline, and gradually, as a result of economic restructuring and of increases in energy and raw materials prices . Nevertheless, a significant financing gap remains as environmental investments compete with, and often lose to other activities for, scarce investment funds. Yet, the size of this gap is both unclear and exaggerated. It is unclear how the inadequacy of environmental investment and hence, their financing is defined, i.e., compared to what target levels of environmental investments in Eastern Europe and Central Asia are inadequate. There are several possible candidates that may serve as reference points (or target investment levels):

- (a) the level of OECD or EU environmental expenditure (1-2% of GDP);
- (b) the level of environmental investment required to meet national standards;
- (c) the level of environmental investment required to meet EU standards or related compliance schedules (of particular relevance to Central and Eastern European countries aspiring to join the EU);
- (d) the level determined or targeted by National Environmental Action Plans;
- (e) the level perceived (or assessed) as required by local policy makers or foreign experts;
- (f) the level required to equalize marginal social returns to investments across sectors;
- (g) the level required to bring about environmental recovery or net environmental improvement (reverse the trend);
- (h) the level justified by expected benefits based on revealed behavior, public polls or willingness to pay studies.

While the above possible points of reference are not necessarily mutually exclusive and any one or combination could serve as a target level of investment for comparison with actual levels, only the last one ensures maximization of social welfare. Unfortunately, statements about underinvestment or inadequate financing are rarely made in reference to specific targets, much less to optimal investment levels. Yet, whatever the reference point or target level of investment, perceived needs are almost always overestimated because a business-as-usual scenario is assumed. Similarly, financial resources are underestimated because the possibilities of using existing resources more efficiently and mobilizing additional resources from innovative mechanisms and unconventional sources are often ignored.

## REDUCING FINANCING NEEDS AND EXPANDING FINANCIAL RESOURCES

The financial needs of individual countries (and of the global economy) for pursuing sustainable development depend critically on what is assumed about national and international policies. Under a business as usual scenario, without correction (or at least mitigation) of policy and market failures and a change in the incentive structure, the financial needs of sustainable development are daunting. The analogy is with the effort needed and energy expended in swimming against the current: a great deal of energy is spent just to offset the force of the current. Similarly, under a business as usual scenario (i.e., without policy reforms), as much as 90 cents of every dollar would go to offset the subsidization (explicit or implicit) of environmentally harmful and unsustainable activities by policy and market failures. This is so because the world is spending annually about \$1 trillion in direct and indirect subsidies of energy, water, agrochemicals, marginal agriculture, deforestation, and heavily polluting industries that degrade the environment far beyond free market levels (Panayotou 1994b). Many of these activities are unsustainable except by virtue of the subsidies. Without phasing out these distortions, sustainable development will be an uphill (or upstream) struggle. What is needed is reversal of the flow not a march at a different pace towards the wrong direction.

With the removal of the barriers to sustainable development and of the perverse incentive structure, the financial needs (both national and global) are dramatically reduced but not eliminated altogether. Yet, both the policy reform and the internalization of external costs through economic instruments are likely to save financial resources as well as to generate new ones, thereby further reducing the need for additional resources.

Keeping the above points in mind, we may classify financing needs into (a) private vs. public and (b) internal vs. external. The **private sector** needs funds to comply with regulations, to pay pollution charges, to undertake environmental investments, to retrofit or relocate existing plant and equipment, to redesign products and to invest in technological innovation. Provided that regulations and/or environmental charges or other internalization instruments are introduced gradually and existing firms are grandfathered during the adjustment process, private sector needs can be financed internally or through commercial borrowing. Where the objective of economic instruments is to change behavior rather than generate revenues, the funds collected from, say, pollution charges may be returned to the private sector in the form of subsidies for

environmental investments or reduction of corporate and other business taxes. Revolving funds by industrial groups and associations and green funds by environmentally-minded investors constitute additional sources of financing that can be mobilized to meet the private sector's environmental financing needs. Finally, an increasing number of industrial firms, especially in OECD countries (e.g., 3M, Dupont, Dow Chemicals, Volvo, Bayer) report that in response to environmental regulations, they have uncovered within the firm a large number of environmental projects that generate surplus financial resources (profits) that can be used to undertake further environmental investments within the firm.

The **public sector's** financial needs for environmental management and sustainable development are varied and far reaching. Financial resources are needed for combating poverty and improving health, for halting deforestation and protecting fragile ecosystems, for providing clean water and sanitation and for addressing urban congestion and air pollution problems, to mention only a few. Clearly, no transitional economy has the resources to directly address all these problems, not even to stabilize environmental degradation at current levels. Nor are there prospects that adequate resources can be transferred from external sources to address these problems through direct public sector investment. Therefore, public sector expenditures are by necessity limited to interventions that have catalytic or demonstration value and that leverage additional resources from the private sector (both domestic and foreign) and which finance the supply of public goods that are undersupplied by the market. The financial needs of the public sector in its role as facilitator and regulator of economic activity are defined by the costs of establishing the necessary institutions and incentive systems for advancing sustainable development. These costs include design, information, administration and enforcement costs, as well as the cost of supplying the basic environmental infrastructure (legal, human and physical). Like the private sector, the public sector may find that a good part of the needed financial resources can be found within the sector through win-win interventions (phasing out of distortionary subsidies, redeployment of existing resources, revenues generated by incentive systems, etc.).

Despite the prospects for reducing financial needs and generating additional funds from domestic sources, the need for the infusion of external financial resources is not eliminated, though it is substantially reduced. **External financial resources** are needed for at least five purposes. First, due to the domestic capital constraints which are extremely severe in Eastern Europe and Central Asia, there is a need for external

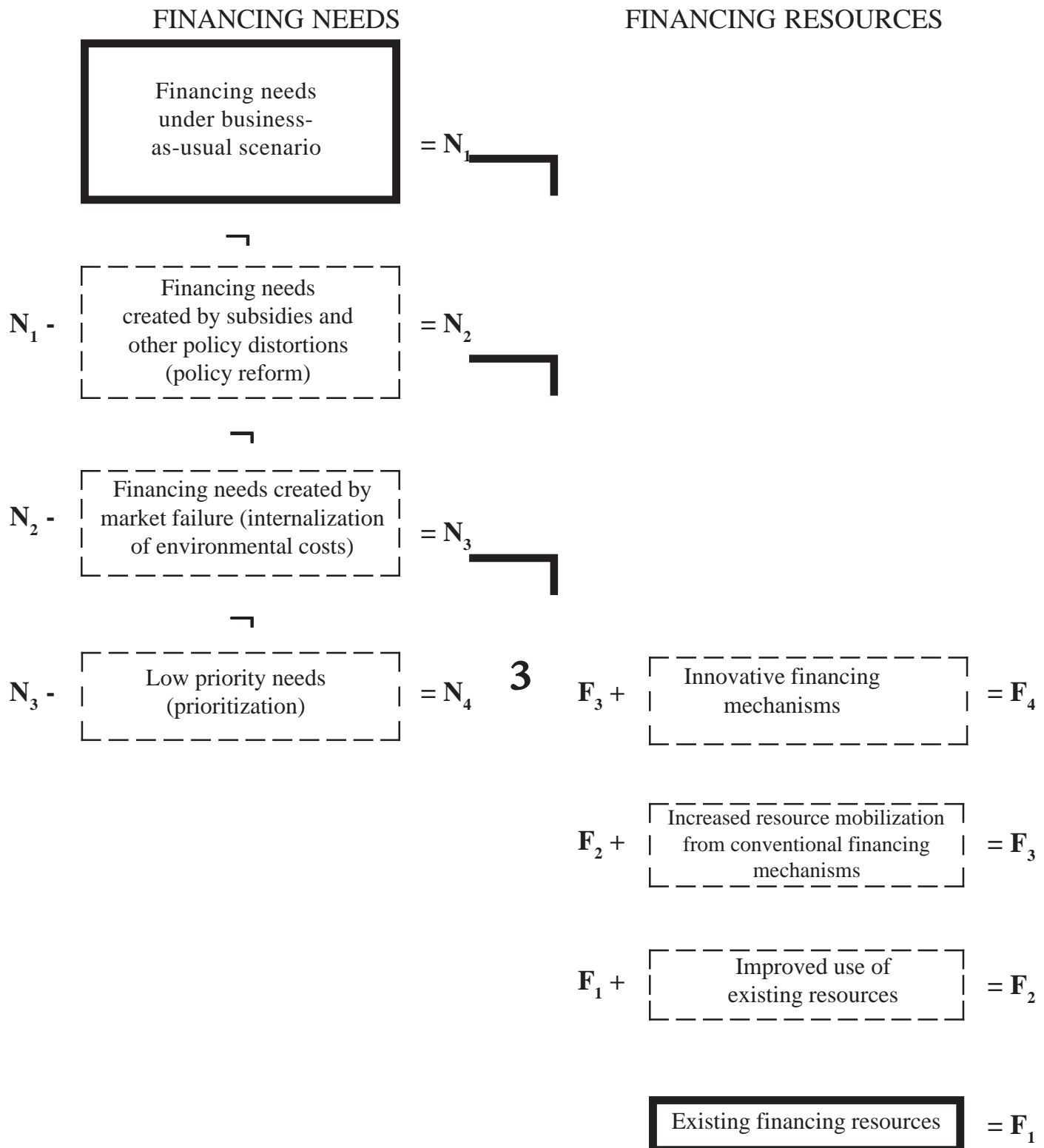
financing to bridge the gap between the domestic demand (both private and public) and the domestic supply. While development of the domestic capital market is the first-best solution to the capital constraint, it is neither sufficient nor implementable overnight without undue disruption. Secondly, external funds are needed to resolve “cash flow” problems arising from the time distance between the benefits and costs of projects and policies. While sustainable development is a “bankable project” (i.e., it generates a positive net present value), the benefits may not accrue for a number of years, while the costs need to be paid today, necessitating long-term bridge financing which is scarce and often unavailable in transitional economies. Third, financing is often needed for cushioning the short-term impacts of policy reforms or to pay compensation to those adversely affected or to build consensus for the reforms; this source of financing need is of paramount importance to transitional economies. Availability of external sources of funding for this purpose can encourage and leverage policy reforms. Fourth, external resources are necessary for financing the foreign exchange components of investments, and to build investors’ confidence as well as to leverage domestic sources of financing; it may also have demonstration benefits. Fifth, cleaning up past contamination (e.g., hazardous waste sites) and restoring damaged natural resources tends to be extremely costly and capital-and-technology intensive, and it cannot be accomplished with domestic resources without distortionary or excessive taxation and crowding out of other investments. Therefore such clean up should be limited to sites with significant health impact or productivity losses and financed with external financial resources to the extent possible. More than any other part of the world, Eastern Europe and Central Asia have embarked on their sustainable development efforts with a huge liability of past contamination which can easily drain all financial resources available with few benefits and high opportunity cost. On the other hand, ignoring the issue threatens the reform process itself (see below).

Finally, and most importantly, there is a need for external financing (in the form of grants rather than loans) to internalize global externalities (e.g. global warming, ozone depletion and biodiversity loss) or to pay the incremental costs of projects which have both local and global benefits which would not be undertaken otherwise. This type of external financing does not represent development assistance or resource transfer, but payment for conservation services provided to the global community by developing countries and transitional economies over and above what they are willing to provide on account of their own self-interest. This financial need may arise from international conventions or simply from pressures from developed countries or the global community to conserve

resources of global value. It may also arise from the host country itself wanting to avoid irreversible losses of environmental assets in earlier years (when poorer) that may be highly valued in later years (when richer). This sort of financing need is, again, of particular importance to transitional economies because of the real risk of irreversible environmental losses, especially in a fragile ecosystem, during the temporary transition process.

To sum up, the financing needs of sustainable development can be dramatically reduced through a) policy reforms such as removal of distortionary subsidies, b) mitigation of market failures by gradually internalizing environmental costs, and c) prioritization of needs by applying benefit costs analysis. Financing resources can be expanded through a) improved use of existing resources by redeploying them to activities with higher social returns, b) increased resource mobilization from conventional sources and mechanisms such as taxes and user fees, and c) innovative financing mechanisms such as offsets, impact fees, betterment charges, risk-taking arrangements, joint implementation, debt-swaps, etc. This narrowing of the gap between financing needs and financing resources is schematically shown in Figure 1.

**Figure 1. Narrowing the gap between financing needs and financing resources**



## **OPPORTUNITIES OFFERED BY TRANSITION FOR FINANCING ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT**

The reforms being undertaken by Eastern European and Central Asian countries for their transition from centrally planned to market economies offer unique opportunities for pursuing sustainable development and for generating resources to finance it. The most important and unique opportunity is the potential to harness the market forces, as they are introduced, to advance a cost-effective environmental policy integrated with economic reforms.

Privatization: It opens the door to private capital and foreign investment, part of which can be directed towards more efficient and cleaner technology as well as towards pollution control and abatement equipment. The new profit-oriented and cost-conscious management entailed by privatization promises more efficient use of energy and new materials and a reduction in waste, as well as more responsiveness to economic instruments for environmental management such as pollution charges and taxes. Secure property rights to land, physical capital, and other economic assets afford access to capital markets and longer term financing. The transfer of ownership also provides an opportunity for environmental audits, assessment of environmental risks and of clean up cost and apportioning of liabilities between the state and the new owners; the needed levels of environmental investment can be determined, and part of the proceeds of sale earmarked for clean up, as was the case in Poland during the early 1990s.

Price reform: the freeing of prices of commodities, the removal of underpricing of energy and natural resources, and the move towards world prices promises both increased efficiency in the use of scarce resources and reduced waste when combined with secure property rights. Higher prices encourage conservation and regeneration of natural resources. In the case of public utilities, the shift from heavily subsidized rates to full marginal cost pricing eliminates wasteful use and unnecessary supply expansion, but it also reduces the financial burden on the budget through cost recovery, and in the case of rising marginal cost, it generates a financial surplus available for environmental investments.

Fiscal reform combined with price reforms and privatization, effectively removes the soft budget constraint faced by state enterprises in a centrally planned economy. The phasing

out of subsidies (both fiscal and financial) removes a major source of perverse incentives that promote inefficiency and waste. The introduction of a modern tax system opens the opportunity for greening the national budget through the employment of new fiscal instruments such as environmental taxes. Such instruments are also likely to be more effective when enterprises are not allowed to deduct environmental charges from their pre-tax revenues as production costs, but pay them out of profits.

Industrial restructuring: the reduced reliance on energy-intensive industry and the closure of inefficient, often heavily polluting industrial plants, result in the reduction of the worst forms and sources of pollution and, consequently, of otherwise needed environmental investments and their financing. Industrial restructuring favors lighter industry and services which tend to be less polluting on the average. Furthermore, industrial restructuring involves plant modernization investments which often bring about both economic and environmental benefits. New technologies tend to make more efficient use of resources as well as to embody the higher environmental standards of their country of origin.

Trade liberalization: the opening of Eastern European and Central Asian economies to international trade has made multiple contributions to the financing of environmental investments by making (a) the necessary foreign exchange available, (b) the less-polluting production and pollution abatement technology accessible, and (c) private capital flows and direct foreign investment attracted to the country. The latter is critical to the long-term financing of environmentally sustainable development, especially in countries with underdeveloped capital markets and scarcity of capital and of domestic mechanisms of resource mobilization. Trade also expands the market to environmentally more demanding consumers, thereby providing incentives for investing in cleaner production technologies and environmentally more sustainable resource use.

Monetary reform: monetary policy can make significant contributions to the effective financing of sustainable development by controlling inflation and insuring a stable and convertible currency and low real interest rates as well as reduced general economic uncertainty.

Banking and capital market reform: Well functioning capital markets and full-fledged commercial banks are the last to develop in the reform process, even though they appeared in rudimentary form in the earlier stages of reform. This is because the other

reforms (privatization, fiscal, price and monetary reforms) must first take root before there is sufficient stability and certainty for financial institutions and mechanisms to develop and play the full resource-mobilization and financial intermediation role they play in market economies. Least developed during the transition process are long-term financing, risk and venture capital, insurance markets, and the like. Yet, this formative stage of the banking system and capital markets in general offers unique opportunities for innovative approaches to financing environmental investments as we will see below, including the establishment of environmental banks, green funds and a variety of guarantee and risk-sharing schemes.

Environmental policy reform taking place concurrently (and hopefully, integrally) with economic reforms, offers the opportunity to introduce more realistic and enforceable environmental standards, to design attainable compliance schedules, and to shape a consistent structure of incentives through economic instruments such as pollution taxes and charges, and even to experiment with innovative mechanisms such as tradable pollution permits and environmental bonds. A realistic, stable, and predictable environmental policy that optimally combines standards and economic instruments can make a contribution to the effective financing of environmental investments and of sustainable development by: (a) providing incentives for environmentally-sound behavior that focuses on prevention, thereby reducing the need for end-of-the-pipe cleanups; (b) providing the necessary incentives and certainty for polluters to invest in cleaner technology and in pollution abatement; and (c) generating financial resources for public environmental investments.

Decentralization of governance and economy is part and parcel of the process of reform and transition to a democratic market economy contributing to the financing of sustainable development by (a) deflating inherited but no longer founded expectations of central government investments or below-cost provisions, and (b) re-establishing local responsibility for environmental management. Decentralization of authority offers the opportunity to better identify local priorities and to mobilize local resources through property taxes, user charges, municipal bonds, etc.

## **TRANSITIONAL CONSTRAINTS TO EFFECTIVE FINANCING OF ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT**

There are many formidable constraints and challenges accompanying the opportunities offered by the transition for effective financing of environmentally sustainable development. First, there are the many legacies of the centrally-planned economy which persist at varying levels in different countries. For instance, privatization has advanced rapidly in the Czech Republic and Russia, stalled in Hungary and Poland, and has barely started in Bulgaria and Romania. The soft budget constraint is hardened in Central Europe but remains soft in Russia and parts of Central Asia. Energy and water continue to be underpriced and even outright subsidized in most transitional economies, including those which have made significant strides in privatization, industrial restructuring, and trade liberalization (e.g. Czech Republic). The resulting wasteful use and inadequate cost recovery contribute to a large financing gap for infrastructure, public utilities and environmental services such as sewage and sanitation. The forced and excessive industrialization, the over-promotion of heavy industry, and the over-reliance on low quality domestic coal for energy in the past, have left legacies that continue to be a source of unsustainable development and a drain on scarce financial resources. Poorly documented but severe past environmental contamination creates health risks and liability concerns that hinder privatization and discourage direct foreign investment as well as other private capital flows. Overly ambitious environmental standards that are selectively or erratically enforced are another legacy of the centrally-planned era that are being gradually addressed but in the meantime have become a major barrier to environmental investments.

If standards cannot be realistically attained, then what level of compliance is acceptable or worth striving for? If standards are not consistently enforced, how much investment to (partially) meet them is justified? Decades of central government resource allocation for environmental (and other) investments, and of provisions of utilities and public services of nominal (or zero) cost have created expectations which persist today, discouraging the application of the well accepted polluter- or user-pays principles. A related legacy of the old system is the lack of local responsibility for environmental management and the underdevelopment of environmental NGOs and other social pressure groups. These two legacies are responsible for both the public's low willingness to pay for environmental improvements in general, and for the limited resource mobilization by community-based organizations in particular.

Added to the legacies of the centrally-planned economies are the challenges and uncertainties of transition, a period of flux, short-term planning horizons, and a "wait and see" attitude. Environmental policy in particular is evolving, standards are changing, and enforcement is variable. The lack of stability and predictability of environmental policy and its enforcement discourages environmental investments and makes their financing risky and unattractive, especially when long gestation periods are involved. Failure to deal with environmental liabilities from past contamination during the privatization process introduces another element of uncertainty, that in addition to slowing down privatization or discouraging foreign investment, also reduces the incentive and available resources for effectively addressing the problem (Panayotou et al. 1994c). A 1992 survey of western firms contemplating direct investments in Central and Eastern Europe found that liability for past contamination was a greater concern than political instability and inadequate infrastructures (Klavens 1992).

While domestic capital markets continue to be poorly developed and financial institutions weak throughout the transition process, governments of transitional economies are generally unwilling to increase their foreign debt by borrowing abroad especially for the environment, which is not directly associated with a stream of revenues to ensure repayments. At the same time, governments are unwilling to provide sovereign guarantees to municipalities and other entities to allow them to borrow abroad or even to issue municipal bonds at home for financing.

### **INNOVATIVE INSTITUTIONS AND MECHANISMS OF ENVIRONMENTAL FINANCING IN TRANSITIONAL ECONOMIES**

The inherited environmental liabilities and the emerging environmental problems of transition to the market economy in the midst of severe financial constraints and underdeveloped capital markets have given rise to innovative institutions and mechanisms for financing environmental investments. They range from debt-for-environment swaps to housing guarantee schemes, from National Environmental Funds to partnerships for energy conversions, and from escrow accounts for clean ups in privatized enterprises to joint implementation schemes. These are partnerships between public and private sectors, between host governments and external assistance agencies<sup>1</sup>, between

---

<sup>1</sup> An example of a three-way partnership for cofinancing is provided by the development of bulk water metering and improvements to the water/sewage distribution in the city of Iasi, Romania in which the

creditors and debtors that piece together the necessary elements for making possible the long-term financing of investments with significant social and environmental benefits. While there is still too much emphasis on soft financing (easy lending terms) than on credit availability, leverage financing, and capital market development, it is a move in the right direction, shifting from grant to loans, from central government provision to self financing and local responsibility for environmental management. Of the many schemes and institutions, we will review five which present interesting features of transitional financing.

### **The Polish National Fund: Financing Environmental Protection Through Earmarked Fees and Charges.**

A number of Eastern and Central Asian countries have sought to address their environmental financing gap through the establishment of Environmental Protection Funds for the collection and disbursement of earmarked funds for environmental purposes. Such extra-budgetary mechanisms, in one form or another, operate throughout Eastern Europe and Central Asia, including Russia, but in no other country has this institution been more important than in Poland, where in addition to the National Fund, there are 49 provincial funds and numerous local funds.

The Polish National Fund for Environmental Protection and Water Management (National Fund for short) was established by Parliament in 1989 as an independent state institution with a Supervisory Board appointed by the Minister of the Environment, for the purpose of financing environmental investments. Its revenues are derived from three sources: (a) pollution charges, non-compliance fines and natural resource use fees (by far the most important source), (b) revenues from the Fund's investments in environmental enterprises; and prospectively, (c) external sources such as bilateral and multilateral assistance agencies (e.g. EU/PHARE, Global Environmental Facility). As a rule, 10% of the pollution charges and fines go to local environmental funds while 60% of the balance goes to the provincial funds and 40% to the National Fund. The latter has also a 40% equity stake in the Environmental Protection Bank (Eco-Bank), another innovative Polish environmental financing institution.

---

municipality, the national government and EBRD collaborated with respective shares of 5%, 45% and 50%. The construction of a giant smokestack at the Phoenix (non-ferrous metals) plant was similarly cofinanced with Norway being the outside donor. (Clifford Zinnes pers. comm.)

The National Fund is Poland's leading financial institution for environmental protection with a mandate to finance investments of national scale and scope or involving large or heavily polluting enterprises (beyond the ability of local and regional funds) or regions particularly degraded. To appreciate the role of this institution, consider that in 1993, the National Fund has contributed 22% of Poland's total environmental expenditures and 36% for local and regional funds. For comparison, the private sector's resources and loans contributed 23%, municipalities 10%, and the state budget and foreign assistance 5% each. By mid-1994, the National Fund disbursed over \$500 million for environmental activities.

The National Fund provides financial assistance in the form of soft loans, grants and subsidies, partial forgiveness of loans, subsidies to loans originated by the Eco-Bank and guarantees against loans for environmental protection. Soft loans constitute the principal form of assistance; in 1993, they accounted for 77% of all disbursements. Interest rates charged on soft loans are between 20 and 100% of the interest on refinancing credit of the National Bank of Poland. Given Poland's high rates of inflation, these nominal rates amount to negative interest advantage over commercial rates. Interest rate subsidies for Eco-Bank loans are given at the same terms as soft loans, while outright grants and subsidies are preferential co-financing mechanisms for environmental investments. Forgiveness of up to 50% of the loan principal is granted in certain circumstances of high environmental benefits and stringent repayment discipline under the condition that the funds saved be reinvested in further environmental improvements.

Given its dominant market share, the National Fund has considerable leverage potential which remains largely unexploited since leveraging private funds for environmental protection is not an explicit objective of the fund or criterion for project selection. However, the provision that limits the Fund's participation to 50% (in practice 20%) of the project's cost and requires co-financing from the borrower's own funds or other sources creates a basis for leveraging and collaboration with other financial institutions.

Unquestionably, the National Fund has made a significant contribution to the financing of environmental sustainability in Poland during the transition period, when capital markets were poorly developed. There are, however, three serious criticisms that also apply to other funds in Poland and elsewhere. First, there is limited attention paid to economic performance, especially to the estimation of benefits, but also to cost-effectiveness. A comparison of estimated cost-effectiveness measured for projects recently funded by the

Polish National Fund revealed variations of more than one order of magnitude (Zylicz, 1994), suggesting poor economic performance. Second, while any 'earmarking of public funds' is a source of distortion to be minimized, the Polish National Fund carries earmarking to extremes by requiring geographic and thematic correspondence between disbursements and sources of funds. Separate sub-accounts are kept by source to be used for predefined purposes. This clause, introduces rigidities and distortions that limit *a priori* the ability of the fund to optimize the use of its resources or to maximize overall net social benefit. Finally, concerns have been expressed that environmental funds might retard rather than promote the development of capital markets and slow down the emergence of local and individual responsibility for environmental management.

### **Financing Municipal Environmental Infrastructure: A USAID-Czech Republic Partnership**

This scheme is an innovative partnership between the United States Agency for International Development (USAID), the Ministry of Finance of the Czech Republic and a Municipal Finance Company ("MUFIS"). USAID provides a US government guarantee that enables the scheme to raise funds on favorable terms (up to 30 year loans with a 10 year grace period) in private capital markets. One percent of the principal is deducted from the loan disbursements initially and one half percent annually of the unpaid balance is deducted as fees for the US guarantee. MUFIS, a joint stock company, receives the funds and provides long-term capital to nine participating (and competing) commercial banks for lending to municipalities for infrastructural projects related to the residential sector, such as water supply expansion, wastewater treatment, solid waste disposal, energy conversion and housing insulation.

The Czech Republic underwrites the foreign exchange risk, thus freeing the banks and municipalities of this barrier to long-term financing. The Czech Government, in turn, has issued counter-guarantees as has the US Government. While USAID provides technical assistance to cities, commercial banks and MUFIS, it does not get involved in the project selection which is the responsibility of the local participating institutions.

The major innovation of the program is the formation of a partnership that is based on each partner's comparative advantage. The resulting benefit is a major extension of the lending period for investments in municipal environmental infrastructure from 3 years available on the Czech capital market to 15 years at fixed rates comparable to those of

short-term loans. While the Program has just begun operations, it has a long pipeline of projects that qualify for funding. It is expected to make \$100 million available for long-term financing of municipal environmental infrastructure over the next five years.

### **Partnership for Energy Conversion in Bulgaria: The Stara Zagora Gasification Project**

The Stara Zagora Gasification Project is an innovative partnership among the Stara Zagora municipality; a private gas supply company, Overgas; and a bilateral development assistance agency, USAID. The objective of the project is the conversion of industrial, commercial, residential and public buildings and utilities in the city of Stara Zagora (pop. 150,000) from highly polluting fuels such as low BTU lignite coal, high sulphur fuel oil, propane gas and wood to natural gas, one of the least polluting fuels available.

The Stara Zagora municipality has entered a dual partnership, a joint venture with Overgas for the construction of infrastructure and the supply of gas and a cooperative project with USAID to assist households and other private and public energy users with the financing of the costs of conversion to natural gas. The municipality is establishing a loan facility to which USAID will provide grant financing. Households and other energy users will be able to borrow funds from the facility to co-finance the costs of conversion. The working capital will be replenished through loan repayment, making possible the financing of additional conversions, thus ensuring financial sustainability.

It is expected that the annual savings in fuel costs for customers after switching to natural gas will be high enough to recover the initial capital costs of connection and appliance modification. As the project is only at its preparation stage, it is too early to assess its performance. It has all the elements of effective financing including amortization of capital costs, leverage of self-financing, replicability, combined economic and environmental benefits (win-win) and financial sustainability.

### **The Slovak Environmental Revolving Fund: In Search of Financial Sustainability**

In its efforts to attain a measure of financial sustainability for environmental investments, the Slovak Republic has for some time been pursuing the idea of establishing a Slovak Environmental Revolving Fund (SERIF). More recently, the idea was folded into a revolving or loan component within the existing Slovak Environmental Fund. While the

concept is still at its formative stage, it provides another example of the development of a new financial institution in a transitional economy to deal with pressing environmental investment needs under conditions of severe financial constraints and an underdeveloped capital market.

The Fund is expected to be capitalized from both domestic and external sources. Domestic sources include revenues from pollution fees and fines and direct financing from the state budget. Foreign sources could potentially include EU/PHARE and EBRD.

The idea is that projects would be packaged in a way that demonstrated the end-borrower's repayment capacity. The Fund would then go into capital markets and borrow money for those projects against reserves provided by its equity capital (not in competition but in cooperation with the banks). It is hoped that over time, with a demonstrated record of repayment, the Fund will enjoy an improved credit rating and lower costs of funds. The return to the Fund's resources would be used to write down the cost of the funds enabling it to lend for environmental health projects at below market rates. Using the income earned from the investment of its reserves the Fund would be able not only to lend at subsidized interest rates but also to lend for longer periods than do Slovak commercial banks at present.

Many issues regarding the Fund remain to be addressed: a) what relative weight would be given to the public and private sectors; b) whether it will function within the government or be implemented through commercial banks, and how (a recent decision has the Fund analyzing the environmental aspects of projects while the banks carry out the financial analysis); c) whether the Fund will leverage its funds by taking deposits and issuing debt or simply relying on available domestic resources and foreign growth; and d) what the level of funding from the state budget would be.

While the revolving fund idea, as it stands, includes an element of soft-financing and lacks sufficient scope for leveraging, its emphasis on long-term financing and loan repayment is a move in the right direction. Its promise depends on the critical assumption that the Fund could actually fund solid investments with a reasonable payback period. This, in turn, depends on the capability to design and evaluate projects in technical, financial and economic terms, skills that are in scarce supply throughout Eastern Europe, and Slovakia in particular. Resolution of these issues is necessary to

establish the credibility of the Fund, to attract foreign funds and to develop local support for the initiative.

### **The Polish Ecofund: An Innovative Co-Financing Mechanism for Transboundary and Global Problems**

The Ecofund was established in Poland in 1992 as an institution for managing resources from debt-for-environment swaps. As part of the agreement for cancellation of 50% of Poland's foreign debt by the "Paris Club" of creditors in 1991, the possibility was provided that an additional 10% of the debt be canceled in exchange for purposes agreed upon bilaterally with creditor countries. Agreements that followed with the United States, Switzerland and France earmarked this part of the debt for environmental protection through debt-for-nature swaps. The Polish Ministry of Finance makes payments to the Ecofund in lieu of foreign debt payments.

The Ecofund is an independent non-profit foundation governed by a Supervisory Council representing the Polish Government and Parliament as well as the governments of the contributing creditor countries. The Council delivers general policy and final decisions on grants, while day-to-day management including initial project selection and supervision of implementation is done by a Managing Board.

The Ecofund provides non-repayable grants to both private and public sectors for environmental investments with transboundary or global benefits. Four "sectors" or priority areas are specified including reduction of greenhouse gases, reduction of transboundary long-range pollutants (SO<sub>2</sub> and NO<sub>x</sub>), Baltic sea pollution and biodiversity conservation. While these areas of focus appear restrictive and restricted to issues of appeal to creditors, they are broad enough to encompass issues critical to Poland's environmental sustainability such as energy efficiency, desulphurization of fuels, sewage treatment, improved drinking water quality and protection of wetlands and forests.

Projects must also meet at least one of the following four sufficiency criteria, derived from Poland's National Environmental Policy priorities: a) provide value for money or cost-effectiveness, b) promote innovative technologies through pilot or demonstration projects, c) promote environmentally sound production or d) provide public health or environmental education benefits.

The Ecofund limits its participation to 20-30% of the costs for most projects; up to 50% for local government projects and up to 80% for biodiversity protection projects.

The Polish Ecofund is an innovative financing mechanism in many respects. It is the first debt for environment swap in a formally centrally planned economy; it involves a group of creditor countries; and it is one of the better organized funds. It has also some deficiencies and drawbacks. Leveraging private sector funds and promoting partnerships is not an explicit object or criterion for project selection, clearly a missed opportunity for greater impact. However, the fact that it provides only partial funding of projects and requires co-financing from the proponent of the project or other source in effect does indirectly leverage funds and promote partnerships. Nevertheless, the lack of project-by-project assessment of the willingness to co-fund and of a coordinating mechanism among funders may result in the displacement of private funding and a reduced leverage effect (Lehoczki and Morris 1995).

The prioritization of funding needs and project selection within the mandate of the fund is made with references to benefit-cost analysis; but in the presence of other sufficiency criteria (innovative technologies, public health) and in the absence of technical guidance on the estimation of project costs and benefits, the economic efficiency criteria may be relegated to secondary importance.

Finally the fund, by its own capitalization via debt swaps and its disbursement via non-repayable grants, is not financially sustainable; it is an explicitly transitional fund that is scheduled to be closed in 2009 with the last scheduled debt repayment.

### **Incentive-based Environmental Financing: Developing Emissions Trading in Almaty, Kazakhstan.<sup>2</sup>**

The city of Almaty in the Central Asian Republic of Kazakhstan endeavors to develop an area-wide emission trading bubble as a cost-effective means of achieving its air emission reduction goals. Almaty has a persistent air quality problem. The existing air quality control strategy that includes technology-based normatives and non-compliance charges has not been sufficiently effective to achieve the air quality goals. Furthermore, the industry is concerned about the inflexibility and unpredictability of frequently changing

---

<sup>2</sup> This section draws heavily on Margolis, Triveti and Farrow (1995).

control requirements based on ambient monitoring. The existing system fails to take advantage of significant differentials in the marginal cost of emission control among industrial operations to minimize costs of achieving air quality goals. High compliance costs and financial difficulties result in both undercompliance and underpayment of fees and charges.

Under the contemplated “cap-and-trade” program, 1200 companies that operate with proper authorizations within the city limits will be allocated a five-year stream of emission allowances. The starting allocation for each facility will be based on a formula that takes into account its actual emissions in 1991 and 1994. To achieve the air quality goal of 7 to 10% annual reduction from industrial sources in the city (Decree No. 68), the allocated emission allowances will be reduced by 7% (of initial baseline) per year. The companies will be required to operate within their emission allowances or purchase additional permits from other companies to cover any excess emissions. Firms that succeed in reducing their emissions by more than 7% a year would be allowed to bank the surplus allowances for future use (up to 3 years) or to sell them to other firms. The city expects increased compliance and significant cost savings from the trading program since high-cost pollution abaters will no longer be forced to achieve the same reductions as low-cost abaters. They could, instead, buy surplus allowances from the latter at a significantly lower cost, thereby stretching their limited resources further. The aggregate emissions will be reduced by 7% as the undercompliance of high-cost pollution abaters is offset by the overcompliance of the low-cost abaters. For hot spots, sales of credits would be encouraged but purchases would be permitted only from within the site; or certain facilities would be required to buy credits at a higher ratio, e.g., 2 tons of allowances for each additional ton emitted.

A significant source of capital to finance emission reduction at those companies that have the opportunity (i.e., are low-cost abaters) but lack the capital would come from new and expanding companies which could buy into the bubble. The need for new and expanding companies to buy in is not likely to be a major barrier to entry and growth since their allowance requirements per unit of output would be lower than existing facilities by virtue of their ability to choose more efficient and less polluting technology. Firms which are currently not complying because they lack the capital to install control equipment are, under the program, given access to the capital of the air credit buyers in order to undertake investments and to create sellable assets. These assets, or surplus allowances, can result from process changes, retrofittings, re-building, input change or relocation.

The city plans to monitor industrial emissions on a regular basis, and to require that companies maintain accurate records of materials used and of resulting emissions and that they report them to the city on a regular basis. To ensure compliance, the certainty-equivalent consequences of non-compliance will be made more costly than the cost of compliance.

Participating companies will be charged fees to hold, bank, and trade allowances. The revenues collected from these fees will be used to finance monitoring and enforcement, thereby ensuring the financial self-sufficiency and sustainability of the program. As the program is still in the design stage, it is not possible to predict if it will work as it is envisioned; yet, the interest and commitment of the city and the national policy makers to effective financing of environmental improvements directly by the polluters is not in question. It provides an inspiring contrast to other, less ambitious, initiatives by environmentally more advanced countries.

### **AN ASSESSMENT: TEMPORARY PALLIATIVES VS. SYSTEMIC REFORMS**

Based on the above review of a sample of innovative mechanisms developed in Eastern Europe, we may conclude that considerable effort is going into financing environmental investments in transitional economies under conditions of severely limited resources and competing pressures. There is no doubt that through these mechanisms, more financing has been mobilized and more environmental projects funded than otherwise. The context has been one of a transitional or short-term financial constraint; and, in that context, efforts (with a few important exceptions)<sup>3</sup> have focused on arranging soft financing to relieve this constraint. Soft financing, in the sense of offering more favorable terms than capital markets, has taken a variety of forms including interest rate subsidy, longer grace periods, longer repayment and reduced risks in a transitional and narrow environmental context. The rationale is multiple and, in the context of short-term capital constraints, sound: a) soft financing fills a gap when capital markets are yet undeveloped; b) it serves as an instrument of internalization of positive externalities; c) it helps address the worst environmental problems affecting health during a period of weak environmental awareness and low willingness (and ability) to pay; d) it has demonstration effects; and e) it is necessary for clean ups of past contamination.

---

<sup>3</sup> E.g., the Almaty Emissions Trading Program and the USAID-Czech Republic Partnership.

In the context of sustainable development and long-term capital constraints, the rationale for soft financing is less compelling since it focuses on the symptom of the financing gap itself, rather than on underlying causes (low willingness to pay, low willingness to finance, limited access, etc.). Soft financing, earmarking, or other forms of subsidy are ineffective means for removing or offsetting financial and economic sector constraints. They are palliatives that bring about temporary relief rather than systemic change of the underlying fundamentals, a *sine qua non* condition for sustainable development. While the effective means are to address the lack of a conducive policy framework, inadequacy of institutions, low environmental awareness and lack of local responsibility for environmental management; soft financing tends to lessen the pressure for restructuring and innovation, to delay needed policy reforms and capital market development, and to work against establishing local responsibility for the environment. Other possible side effects include the displacement of other private or public funding for environmental investments and the inherent bias for end-of-the-pipe clean up projects<sup>4</sup> as opposed to prevention and for-capital-intensive (hardware) investments as opposed to better management ("housekeeping" or "software"). Soft financing reinforces the all-too-common perception in formerly centrally planned economies that environmental investments do not pay and therefore central government provision below cost or outright subsidization is justified. Subsidies of any form tend to be capitalized in the value of land and other fixed assets and more damagingly into investors expectations making their removal both difficult and disruptive. This is not to say that soft financing has no useful role to play but to emphasize that it must be limited, targeted and temporary; that it must have high catalytic or demonstration value; and that it must leverage new and additional funds from the private sector (self-financing) and encourage innovative partnerships. Careful analysis of willingness to co-finance should precede any supplementary funding and the implicit subsidy of soft loans should be calculated and compared with possible alternatives to ensure cost-effectiveness. Such efforts are currently underway with regard to the Polish National and regional environmental funds.

Ultimately, the binding constraint is not the lack of funds or the lending conditions, but the lack of effective demand for and access to credit. The key question is why the private sector is not investing more in environmental improvements. The answer has more to do with the expected benefits compared to the opportunity costs of such investments. When

---

<sup>4</sup> This bias arises from the fact that mainly end-of-the-pipe projects qualify as purely environmental projects deserving subsidy.

the policy and regulatory environment allows externalization of environmental costs through free disposal, lax enforcement of standards or subsidization of energy, water and material use, the expected benefits from and, hence, the effective demand for environmental investments are limited. The state apparently shares the view that benefits of environmental investments do not warrant the costs as evidenced by its unwillingness to increase its debt by borrowing for the environment or even to offer sovereign guarantees to municipalities to issue bonds to finance municipal investments. While there are legitimate concerns that the benefits from environmental investments have a long gestation period and are not always associated with revenue streams that enable loan repayment, these are not inherent features, but the result of policy, market and institutional failures, and the lack of prioritization through careful assessment and full valuation of benefits and costs.

A realistic, stable, predictable and enforceable environmental policy, that addresses both a liabilities and emerging environmental problems and realigns the private incentive structure with social interests, promises to do more for effective financing of sustainable development than any conceivable level of soft financing. Still, not all environmental investments that local policy makers or foreign experts consider "necessary" would be undertaken. The public's willingness to pay for environmental improvements is constrained by income levels, but so are all other investments. While much can be done to raise the public's environmental awareness (and hence its willingness to pay for environmental services), there are only a few environmental problems (e.g. irreversible losses) that justify overriding individual preferences as expressed by both economic behavior and democratic expression of political support. Failure to prioritize public investments according to the beneficiaries' willingness to pay not only limits cost recovery (and hence financial sustainability) but, more damagingly, it erodes public support even for investments that do generate sufficient benefits to warrant the costs.

Finally, effective financing calls for clarification of the relative roles of public and private sectors, with each focusing on its own comparative advantage yet collaborating in holistic partnership. The state has a key role to play in establishing a conducive policy and legal framework, in ensuring macroeconomic stability, and in facilitating the development of capital markets.

In transitional economies, the state can promote effective environmental financing by speeding up privatization, securing property rights and encouraging foreign investments

through removal of barriers, including liability for past pollution and introduction of realistic and enforceable standards. An environmentally proactive government would further take steps to green the tax system; to introduce market-based instruments for environmental management; to provide sovereign guarantees for municipalities to issue bonds to finance environmental investments and to enhance environmental awareness. While areas such as non-point pollution, irreversible environmental damage, highly toxic waste and past contamination call for a more active state role, the bulk of environmental investments should be privately demanded and self-financed, even in transitional economies. Cash flow problems, short-term financial constraints and the scarcity of long-term financing can be addressed most cost-effectively through risk sharing partnerships of the type described in the Czech housing guarantee or the Bulgaria energy conversion projects, in which the state and foreign assistance agencies play a facilitating or catalytic rather than financing role.

### **POLICY LESSONS AND RECOMMENDATIONS FOR LONG-TERM FINANCING OF SUSTAINABLE DEVELOPMENT**

The experience of developing countries and more recently of transitional economies suggests a number of lessons and recommendations for securing effective long-term financing of environmentally sustainable development.

1. *Rely more on the country's own economic growth and resource mobilization to finance the alleviation of domestic environmental problems than on foreign assistance.* International aid may help in institutional capacity building and occasionally play a catalytic role in domestic resource mobilization; but it is never an adequate or sustainable source of funding for what are recurrent and systemic problems. It is with regard to global environmental problems (global warming, ozone depletion, biodiversity loss) and obligations that arise from international environmental agreements that transitional economies should more aggressively pursue international financial transfers through joint implementation, debt-swaps, GEF grants and the like.
2. *Set realistic and attainable environmental goals that correspond to the country's socio-economic conditions and national priorities.* Overambitious targets, excessively strict environmental standards, and detailed environmental action plans not matched by commensurate enforcement capability and funding tend to discredit environmental policy and the credibility of the state

as environmental investor. The resulting public disillusionment further erodes the public's already low willingness to pay for environmental investments. It is only by setting and *meeting* realistic standards and targets that the environmental authorities will earn the public's confidence and the credit-worthiness to access the necessary funds, whether through user charges, municipal bonds or capital markets.

3. *Opt for incentive-based rather than command- and investment-based environmental improvements.* Since a good part of needed environmental investment is end-of-the-pipe clean ups and since supply expansions of public utilities are the result of a perverse incentive structure implicit in the pricing and taxation system, it is no wonder that environmental investments are generally perceived not to pay and not to be bankable. Removal of perverse incentives, internalization of environmental costs and implementation of the polluter- and user-pays principles (even gradually) would reduce the investment needs and expand the available financial resources. Incentive-based systems - such as environmental taxes, pollution charges, user fees, tradable emission permits, deposit-refund systems and environmental bonds - discourage wasteful and polluting behavior, minimize the cost of compliance and generate funds for public investments in environmental protection. The existing charge and fine systems in many countries are revenue raising devices rather than incentive systems.
4. *Encourage private capital inflow, in general, and direct foreign investment, in particular, to relax the financial constraint on all investments (including environmental investments) and to access the best available environmental technology.* In many newly industrializing economies (e.g., Malaysia, Thailand, Indonesia, China), private capital flows are several times the official development assistance; in the transitional economies of Eastern Europe and Central Asia and a good number of developing countries (especially in Africa), private capital inflows are minimal. Contrary to conventional wisdom that low environmental standards are needed to attract foreign investments, multinationals prefer to establish facilities consistent with environmental standards at home for two reasons: (a) the plant design and equipment they import employ the latest least-polluting technology, and (b) their environmental performance in one country affects their image and operations worldwide. What discourages investors most is not strict environmental

standards or high pollution charges, but (a) unpredictable and ever-changing environmental policy, (b) exemptions of domestic firms or other competitors through variable and inconsistent enforcement, and (c) uncapped liabilities for past contamination.

5. *Clarify the potential investors' liability for past contamination to reduce barriers to foreign investment and privatization of state enterprises.*  
Indemnifying the new owners of privatized state enterprises against clean-up costs or other inherited liabilities, arising from past pollution, is a win-win solution to effective financing of environmentally sustainable development: it raises the sale price of the enterprise by more than the cost of clean up (Panayotou et al. 1994c); it encourages private investment and inflow of foreign capital; and it increases the access to less-polluting technology. Indemnification would also establish a dividing line between past and future pollution for which the new owners would be held responsible according to the polluter-pays principal. It also allows the government to prioritize clean-ups according to expected social benefits and opportunity costs of the funds; thereby making a more effective use of limited resources.
6. *Shift more of the financial responsibility for environmental protection to (a) the private sector through privatization, and the introduction of environmental bonds, deposit-refund systems, impact fees, betterment charges, and clear liability laws; and (b) to local communities and municipalities through decentralization of decision making and resource mobilization, especially the authority to set priorities and to issue debt to finance local environmental improvements within broadly defined national guidelines.* At the same time, national environmental policy makers should seek a more active role in the privatization, the pricing and taxation policy and the investment approval process. Assessing and addressing the environmental consequences of investment projects (especially infrastructural) is generally a more effective means of protecting to environment than undertaking clean up or mitigatory environmental investments.
7. *Seek to shape expectations as to the future environment pricing policy and regulatory framework so as to influence the design of new facilities at relatively low cost rather than to retrofit existing facilities at high cost.* The preoccupation with the potentially high costs (of the not always necessary) clean up of past contamination *and* the misguided efforts to retrofit older

facilities to fully comply with *ex post* set standards has diverted attention from the once-in-a-lifetime opportunity to shape the future during the formative stages of the emerging new economy. Industrial plants that are being designed and infrastructure that is being developed today, under an uncertain policy environment, will determine environmental sustainability and the costs of improving it for decades to come.

8. *Promote a more open discussion and informed debate of environmental issues, of the environment/growth trade-offs, and of policy alternatives (including the costs of inaction) to attract public participation in priority setting and to enlist public support for the chosen priorities.* Understanding and appreciating the benefit of environmental policies and investments and the opportunity costs involved is key to willingness to pay either directly, through user fees, or indirectly, through taxation and regulation, and thus key to financial sustainability. Given the low public demand and weak political support for environmental investments, the top investment priority ought to be the availability of information and the fostering of public debate, rather than the construction of waste treatment facilities.
9. *Prioritize environmental objectives, policies and investments through vigorous cost-benefit analysis and broadly-based public participation to make the most of limited available resources and to generate new ones.* Estimation of benefits and comparison with opportunity costs, until recently a luxury for wealthy western economies that can afford a great deal of waste, is a basic necessity for developing transitional economies with meager resources and colossal needs. There can be no justification for environmental investments involving substantial opportunity costs in terms of forgone economic growth when win-win policies and no-regret investments - such as those that increase energy efficiency and reduce wasteful water use<sup>5</sup> - remain unexploited. Beyond win-win policies, low-cost, high-return environmental protection investments must be pursued ahead of investments and regulations that involve difficult environment-economy trade-offs.
10. *Leverage limited public funds to mobilize additional financial resources from the private sector and external sources to alleviate short-term financial constraints while all the necessary reforms for the development of local*

---

<sup>5</sup> For instance, energy intensity in Eastern Europe and Central Asia is higher than twice that of OGCD Europe. Water intensity is more than 1.50 times; and pollution intensity, several times higher.

*capital markets are put into place and take effect.* Leveraging can take the form of sovereign guarantees, risk sharing, revolving funds and the like. Existing environmental funds do engage in leveraging, but only as one of many objectives, or as a by-product of financing limits and co-financing requirements. Limited public funds would go farther in promoting sustainable development if subsidies, grants and soft loans are replaced by leverage-maximizing instruments.

## **CONCLUSION**

The transitional economies of Eastern Europe and Central Asia have taken innovative steps to address their yawning financing gap for sustainable development. The emphasis for this has been on lowering the costs of financing through explicit or implicit subsidies with a few exceptions of a more catalytic or facilitating nature. While this approach is helpful as a stopgap measure during transition, more fundamental changes and innovations are needed to ensure long-term financial sustainability. These include both policy changes to stimulate effective demand and institutional development to stimulate supply. Ultimately, environmental sustainability cannot be divorced from financial sustainability.

## REFERENCES

- Environmental Action Programme for Central and Eastern Europe, abridged version of the Document endorsed by the Ministerial Conference. Lucerne, Switzerland, 28-30 April 1993. Pre-publication draft, 31 March 1994.
- Esty, D.C., G.H. Boge and S.S. Guylay. "Environmental Protection and Economic Transition." Yale University, New Haven, CT. 1995.
- Francis, P. (ed.) National Environmental Protection Funds in Central and Eastern Europe. Regional Environmental Center for Central and Eastern Europe, Budapest. 1994.
- Harvard Institute for International Development. "Impediments to Environmental Investments in Central and Eastern Europe and the Newly-Independent States." Prepared by the Environmental Economics and Policy Projects for Central and Eastern Europe and the Newly-Independent States for the US Agency for International Development, HIID, Cambridge, MA. May 1995.
- Klavens, Jonathan. Survey of Western Direct Investment and Environmental Issues in Central and Eastern Europe. World Bank/OECD. 1992.
- Laurson, P. "A Strategy to Enhance Project Financing for Environmental Investments in Central and Eastern Europe." A study commissioned by the European Bank for Reconstruction and Development (Draft Final Report). February 1995.
- Lehoczki, Z. and E. Morris. "Environmental Fund Disbursements: Incentives for Performance in Central and Eastern Europe" (draft) Harvard Institute for International Development, Hungary Environmental Economics and Policy Program, Budapest. August 1995.
- Lehoczki, Z. and G. Peszko. "Financing Environmental Protection: The Case of Environmental Protection Funds." Presented at the OECD Workshop on the Use of Environmental Funds in Economies in Transition. Budapest. 6-8 June 1994.
- Margolis, J., G. Trivedi and S. Farrow. "Developing an Areawide Emission Trading Bubble for the City of Almaty, Republic of Kazakhstan." A Feasibility Assessment Prepared for the Harvard Institute for International Development by Dames and Moore. Almaty. July 1995.
- Melzer, A. and T. Zylicz. "Enhancing Environmental Project Financing in Central and Eastern Europe." Report to the Group on Environmental Project Financing (draft). 1995.
- Panayotou, T. "Financing Mechanisms for Agenda 21 (or How to Pay for Sustainable Development)." Presented at the Experts Meeting of Finance of the United Nations Commission on Sustainable Development. 2-4 February 1994a,. Kuala Lumpur, Malaysia.
- Panayotou, T. "Financing Mechanisms for Environmental Investments and Sustainable Development." Prepared for the United Nations Environmental Programme's

- Consultative Expert Group Meeting on the Use and Application of Economic Policy Instruments. 10-12 August 1994b. Nairobi.
- Panayotou, T. "Matrix of Financial Instruments and Policy Options: a New Approach to Financing Sustainable Development." Paper presented at the Second Expert Group Meeting on Financial Issues of Agenda 21, UN Commission on Sustainable Development. Glen Cove, NY. 15-17 February 1995.
- Panayotou, T., R. Bluffstone and V. Balaban. "Lemons and Liabilities: Privatization, Foreign Investment, and Environmental Liability in Central and Eastern Europe." In *Environmental Impact Assessment Review*, 14(1994c).
- Sachs, J. "Economies in Transition: Some Aspects of Environmental Policy." Delivered as the Keynote Address to the Workshop on Economic Instruments for Sustainable Development, January 12-14, 1995, Pruhonice, Czech Republic. Environment Discussion Paper, No. 1. International Environment Program, Harvard Institute for International Development. Cambridge, MA. February, 1995.
- United States General Accounting Office. "Environmental Issues in Central and Eastern Europe." GAO, Washington. May 1994
- Vaughan S. (ed.) "Greening Financial Markets." Report of the UNEP Round Table Meeting on Commercial Banks and the Environment. 26-27 September 1994. Geneva.
- Zylicz, T. "A Survey of the Cost-Effectiveness of Investment Projects Co-Financed by the Polish National Fund for Environmental Protection." Warsaw Ecological Economics Center. Warsaw. July 1994.