

Correcting Environmental Market Failures through Environmental Fiscal Reforms in China

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I. What are EFIs? What Purposes do They Fulfill?

Environmental fiscal instruments (EFIs) cover the range of fiscal instruments designed to promote efficient and sustainable use of natural

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resources and cost-effective pollution control or abatement. The EFI instrument mix includes three main components, which are closely intertwined:

- Public **revenue instruments** such as environmentally related and natural resource-oriented taxes and charges,
- Public **expenditure policies** and fiscal transfers, and;
- Environmental and natural resource **pricing policies**.¹⁾

At the intersection of the public budget system and the environmental policy matrix, EFIs can fulfil the following **roles**:

- **Create economic incentives** for efficient resource use and pollution abatement by driving up the cost of environmentally harmful activities or increasing the returns from sustainable approaches (e.g. environmental taxes and charges);
- **Mobilise and allocate funds** for environmental protection and natural resource management (e.g. via environmental fees and charges, and fiscal transfers);
- Ensure an **equitable distribution of benefits and costs from the management of public environmental resources**, e.g. universal access to basic environmental public goods (via public investments and pricing).

1) Public pricing policies are included in the EFI policy mix since they directly and indirectly impact on environmental fiscal revenues and expenditures.

II . EFIs and Their Application in China

1. Achievements in the Application of EFIs in China

1) Environmental Taxes and Charges

The polluter pays principle (PPP) has been endorsed by the Chinese government as a guiding principle for pollution management. China's long experimentation with the **Pollution Levy System** (PLS) and a variety of other instruments has generated valuable experience and a solid basis on which to future efforts can build. The recently revised PLS is one of the most comprehensive in the world.²⁾ In 2004, revenues raised through PLS amounted to RMB 9.4 billion. The fee on urban water resources is a further example of how environmental concerns have been directly addressed through the system of special revenues.

Strictly speaking, no single tax in China's current tax system can be labelled an "environmental tax", but several taxes are in place, which have potential impacts on environment and natural resources. Six **environmentally-related taxes** have been introduced within China's tax system: natural resource taxes Consumption taxes,³⁾ an urban construction

2) The pollution levy is meant in theory to internalize the external costs caused by polluting behaviour, but in effect the rates are set too low to have a strong incentive-effect on polluters.

3) Consumption taxes are currently imposed on five energy-related products including: gasoline, diesel oil, motor tires, motorcycles and cars. These taxes are considered

and maintenance tax, vehicle use taxes,⁴⁾ a fixed asset investment direction adjustment tax and land use taxes.⁵⁾ These six taxes account for about 8% of national tax revenue.

The introduction of Total Emission Control, and the implementation of the Emission Permit System, provides a sound basis for emissions trading. The year 2002 saw the official launch of emissions trading demonstration activities, covering 7 provinces (Municipalities) and one business conglomerate. Although it has provided more flexibility to enterprises, problems remain regarding the initial quota allocation, consistency with existing policies, and trans-boundary trade activities.

2) Public Environmental Expenditures

There has been a steady increase in environmentally related public expenditures over the past decade. During the period 1998~2002, 38% of total public long-term debt was invested in environmental protection and ecological construction project.⁶⁾ This includes expenditures on urban environmental infrastructure; protecting the three lakes, three rivers; the Sloping Land Conversion Programme; etc..

Eco-environmental Compensation Charges (EECC) have been introduced

'environmentally related' as they provide scope for environment-based tax differentiation (this is currently being discussed in policy circles, and considered e.g. for fuel taxation reform).

- 4) The vehicle and vessel usage tax is not intended for environmental protection purposes but may potentially have such a function because of the differentiation according to tonnage of ships and trucks, and by type of cars.
- 5) Property taxes apply to vehicle use and land value investment and are environment-related in a similar way to the consumption tax.
- 6) Including: urban environmental infrastructure; protecting the 'three lakes, three rivers'; the Sloping Land Conversion Programme; etc..

on a pilot basis since late 1980s. A more comprehensive ecological compensation scheme was introduced in the late 1990s for the Sloping Land Conversion Program (SLCP), and the Natural Forest Protection Program (NFPP), which gained 7.5 million ha of slop land converted by investing about 55 billion RMB. In 2004, the GoC decided to spend 2 billion RMB to compensate for the ecological services provided by key forests in the following years. However it is widely recognized that this policy needs to be further improved. There are concerns specifically around the payments basis, implementation effectiveness, regional differences, and impacts on the poor.

Most significantly, the Chinese government is currently preparing to set up an Environmental Fiscal Expenditure Account (EFEA) under the public budget. This could be a major step forward in terms of improving the efficiency of public spending on environmental protection at the national level. Sub-accounts will be set up under the EFEA for the following items: environment management, environment inspection, pollution prevention, natural resources protection, crude forestry protection, sloping land conversion policy, anti-desertification programs, and grasslands rehabilitation programs.

3) Environmental Pricing

The pricing system as a whole has come a long way in the transition to a market-oriented economy. Moreover, there have been encouraging instances of environmental concerns being explicitly considered in a pricing scheme. The introduction of a fee to recover the costs of desulphurisation treatment in coal-plants,⁷⁾ and the wastewater treatment

fee are good examples of this. A very encouraging progression in recent years has been the increasing openness of the pricing process (e.g. public hearings).

There is a growing recognition at the centre that environmental policy can make more use of fiscal instruments. *GoC has fully embraced the concept of charging of tariffs for cost recovery.* Where resource scarcity is a concern (e.g. water), there has been growing recognition of the usefulness of pricing as a demand management tool. Recent trends show improved utility pricing policies in terms of purely financial performance. While this was not explicitly for environmental purposes, it has encouraged more efficient resource use, which is clearly consistent with environmental objectives. Prices generally need to be further increased however to fully reflect external environmental costs.

2. Policy Gaps and Weaknesses

1) Absence of an Institutional Framework for The Pricing of Environmental and Natural Resources

Pricing policies in a range of sectors have major impacts on the environment. Deforestation, soil erosion, urban air pollution, and traffic congestion are just a few symptoms of pricing policies that inadequately reflect environmental damage costs. Evidence is that environmental and depletion costs are systematically ignored in pricing policy. Important resources such as energy, water, timber, fisheries and grasslands are being put under unprecedented levels of stress as a result of perverse

7) In line with the requirements of the air pollution control act, 2002.

price incentives.

Yet pricing remains outside the control of environmental authorities and comes under the remit the National Development and Reform Commission (NDRC). The mandate of the NDRC's Pricing Bureau is essentially to ensure that market forces effectively play out to determine prices. The chief concern of policy-makers regards the impacts of price changes on production costs, consumption and corporate profits. As such there is no effective framework for the pricing of goods that exhibit externalities at this level.

Prices can also be adjusted indirectly through the taxation system, which comes under the authority of the State Taxation Administration (STA). The STA's key and overriding function, however, is to raise and collect revenues, not to adjust the pricing system. Moreover, the STA is merely an implementing agency: the Ministry of Finance (MoF) makes the final decisions on taxation, as well as on public expenditures. Similarly, SEPA is but an implementing agency for the NDRC.

The current taxation system focuses on a narrow concept of economic efficiency that excludes environmental externalities. Strictly speaking, no single tax in China's current tax system can be labelled as an "environmental tax", but several taxes may have significant environmental impacts. Among the various environmentally related taxes the natural resource taxes are the ones with the most explicit environmental dimension. However, the main purpose of these is not to promote conservation or sustainable use of natural resources, rather it is to adjust the incomes of companies and promote market competition. Moreover, the current resource taxes only cover non-renewable resources. Environmental charges are widely applied, but these takes the form of *off-budget* fees

collected according to environmental protection policies and regulations, many of which have not been upgraded to laws.

The low participation of environmental authorities and experts in the pricing and taxation processes is a major factor in the failure to integrate environmental externalities into pricing and taxation.

2) Public Financing for Environmental Protection Remains Inadequate

Ambiguity with regard to the roles of public authorities in dealing with environmental issues results in a mismatch between responsibilities and means for environmental protection—The fiscal and environmental regimes are weakened by split responsibilities, which lead to coordination failures and even to institutional conflicts between ministries and levels of government. The result is chronic shortage of budgetary (and human) resources to deal with many environmental problems, especially at local levels (such as financing of nature reserves, upstream wastewater treatment etc.).

Coordination failures tend to be more pronounced in the management of environmental resources that span many jurisdictions. For example, with respect to the seven big trans-boundary rivers government policy makes insufficient provision for upstream-downstream coordination for integrated watershed management. As a result, there is neither the incentive nor the financial capacity to invest in pollution control or treatment⁸⁾ upstream.

The ***low efficiency and effectiveness of fiscal expenditures on***

8) This situation can be rectified if a system were in place for fiscal transfers from central government to upstream locality to pay for pollution control and treatment.

environmental protection is a growing problem that needs to be addressed. Much of current public expenditure on environmental protection ends up having little impact, often because local governments do not have the financial resources to match central funding (this is especially true for spending on operation and maintenance) and lack the resources to manage environmental programs. Moreover, the effectiveness of big centrally formulated programs (e.g. the Sloping Land Conversion Program) is low when implemented uniformly across the country without due regard to regional differences.

To a certain extent low efficiency and effectiveness are results of unclear objectives leading to poor targeting of financial support. But a number of other factors are also at play. Plans are often not based on realistic assessments of available fiscal resources and include arbitrary investment targets (e.g. wildly off-target wastewater treatment targets). In other words planning and budget processes are poorly coordinated. In addition, there is poor public financial management and accountability, as reflected namely in erratic and ad hoc changes in spending priorities. This is made worse by the general lack of transparency in the budget approval process. Finally, there is lack of integration between environmental, social and economic objectives, as well as lack of coordination between pricing, taxation and expenditure policies.

3) The Fiscal Regime for Environmental Protection Exacerbates Regional Inequalities

The **system of fiscal transfers is inefficient and regressive** – Fiscal transfers fail to reduce disparities and to ensure a fair and efficient

distribution of benefits from environmental resources. Three aspects in particular are worth noting:

- ***Economic costs and benefits arising from resource exploitation and use are unfairly distributed across regions and population groups***—This is true at different spatial scales. At the regional level, developmentally-delayed but resource rich regions are not adequately compensated when their resources are extracted and transferred elsewhere in the country. The resource-rent transfers represent significant losses in development potential for these poor regions;
- ***Unstable and unpredictable transfers undermine local governments' ability to deal effectively with environmental issues***—Local governments in most developmentally delayed regions of China depend on financial transfers from the centre. But these transfers are often unstable and unpredictable. This reinforces the short-termism in local government planning and spending and its focus on economic growth. Weak control and supervision of local government budgets means that central fiscal support intended for environmental purposes often get diverted to financing other emergencies or priorities;
- There is a ***complex system of equalisation and special purpose transfers*** from central and provincial governments that are poorly coordinated and tend to have a perverse effect, benefiting rich areas with high rates of economic activity over poor areas. As a result poor provinces often lack the financial support from central government to undertake key environmental protection functions.

Structural inefficiencies in the taxation system reinforce

distributional inequities—In particular, there are continuing perverse subsidies to certain forms of energy, large-scale water use and pesticides use, which increase environmental externalities and are both economically and environmentally damaging and represent significant drains on the public budget. Resource taxes are currently set too low to provide real incentives for efficient use and allocation. It is the poor, invariably, who suffer most from the environmental degradation caused by such policies, even when they were the intended beneficiaries.

The flow of private financing for environmental investments is biased in favour of relatively affluent coastal cities—China has known some significant successes in attracting increasing private sector investment to environmental infrastructure over the past decade, namely in the area of waste management. However, most of these investments are concentrated in relatively well-off urban centres on the Eastern coast. Private investors are unable to get a guaranteed return in poor regions mainly because of: (i) a low rate of fee collection (related to affordability constraints); (ii) rigid pricing schemes that do not allow enough scope for regional differentiation, and; (iii) mis-targeted financial support from central government.

Inadequate procedures for public participation continue to be an obstacle, and reform in this area will reduce the costs and improve the effectiveness and pro-poor aspects of EFIs. The experience of Water User Associations (WUAs) provides a good example of how participation in environmental management can yield beneficial results for the poor.

III. On the Feasibility of EFIs in the Current Context

An enabling policy environment—The current climate of reform and transition provides a very good basis for implementing EFIs. In China, as in other countries, there is increasing recognition of the potentially important role that EFIs can play in addressing environmental issues in a way that is *consistent with other economic and social goals*. There is also a growing body of knowledge and practice internationally that China can draw on in designing and implementing EFIs for environmental management.

Technical feasibility—Despite data limitations, it is often feasible to work out estimates of external cost that are operationally useful. Indeed the magnitude of external costs is such that we can often be confident as to the direction in which market prices should be adjusted. Even where measurement difficulties make it difficult to estimate environmental damage costs, proxy measures may be employed, such as politically determined levels of remedial or preventive expenditures.

The OECD is currently working with the Chinese government to improve the quality and reliability of environmental information: this will lower the technical barriers to implementing more sophisticated EFIs in the future.

Administrative feasibility—In practice, many EFIs can be designed with low administrative costs. Indeed they can often be combined within the existing tax system. For example, excise taxes on fossil fuels are

among the easiest to levy, especially if they are collected at the point of production. Most of the measures we propose in this report require very little administrative changes, as they build on existing structures.

Social feasibility—Regardless of their actual impact, there is a common perception that price increases will have regressive impacts. This is not necessarily the case. It is often the better-off who benefit most from cheap environmental services and natural resources, while the poor suffer disproportionately from the environmental degradation resulting from over-exploitation and use.

EFIs can contribute to social goals by addressing the environmental problems that matter to the poor such as soil degradation and by enforcing a more equitable distribution of costs and benefits from environmental resources. They can also improve poor peoples' access to basic environmental services (such as clean water) by generating funds for infrastructure expansion and targeted programs of support.

Price increases do not always result in increased financial burden for users. For example, there is anecdotal evidence from Anhui province that in spite of water price increases the water bill for some Water User Associations has actually decreased because of water saving, and collection rates have improved reflecting increased willingness to pay. Eliminating subsidies to pesticides/fertilisers has the potential to reduce over-use without affecting costs seriously, and can contribute in the long-term to higher soil productivity. Where price increases do give rise to affordability problems however, it is important to introduce mechanisms to address the special needs of poor households.

Political feasibility—There are bound to be losers as well as winners from any policy change. International experience shows that lack of

political will and resistance from interest groups may often be the most significant obstacles to implementing EFIs. There is currently strong leadership and political will to tackle environmental problems in China. What is needed is careful management of the policy process for introducing EFIs. Proposed changes will stand a greater chance of success if they build on a strong understanding of relevant institutional and political economy aspects and if stakeholders are involved in the design, implementation and monitoring processes. Gradualism in implementation and advance warning are key factors for political feasibility, since affected parties need to be given the time to adapt to proposed changes.

A supportive legal and regulatory framework—A strong legal and regulatory framework is in place to support the broader application of EFIs in environmental management. Many recently enacted or promulgated special laws and regulations relating to environmental protection and natural resource management explicitly mention the use of economic instruments to achieve stated goals (e.g. Water Act, the EIA law, and the Cleaner Production Act). The legal and regulatory framework for pricing is also increasingly comprehensive.⁹⁾

IV. Mainstreaming EFIs into Public Finance

Full advantage should be taken of present opportunities to systematize

9) E.g. pricing law (1998); public hearing on pricing measures (2001); 'tentative measure to supervise price of important commodities and services' (2003); 'anti-monopoly' provision (2003).

existing environmental fiscal funds and policies, gradually setting up a framework for integrating environmental fiscal instruments into the public financial system. Toward that end this Task Force recommends that the following actions be taken:

- 1) Establish a Policy Framework for Efis that Sits Firmly within the Public Financial System and Involves Relevant Sectoral Agencies.
- (1) The first major task is to clarify **existing government functions with regard to EFIs**. In particular the State Council's role in valuation and prioritisation of environmental objectives, and the respective responsibilities of NDRC, STA and MOF vis-à-vis environmentally-related pricing and taxation policy and environmental fiscal expenditures should be clarified.
 - (2) The next step is to **establish coordination and evaluation mechanisms for EFIs**. We recommend that a **Lead Group** on EFIs be set up under the State Council, involving other national or local level agencies as appropriate. The Lead Group would be responsible for: (i) identifying and assessing the feasibility of specific EFIs, and; (ii) coordinating design and implementation of environmental expenditure, taxation and pricing policies.
 - (3) **Participation of environmental authorities in economic and sectoral policy processes should be enhanced**—SEPA should be empowered to engage meaningfully in pricing, taxation and expenditure policy processes. To this end environmental authorities need to build up a strong scientific base and capacity for economic

analysis, as well as strengthen environmental monitoring capabilities. They should also be involved more systemically with the public hearings process.

2) Ensure the Proper Establishment and Effective Functioning of the Environmental Fiscal Expenditure Account (EFEA)

The establishment of an Environmental Fiscal Expenditure Account (EFEA) is under preparation. To ensure that the EFEA is effective in providing a stable framework for public spending on environmental protection at the national level, the following operational rules and principles should be observed:

(1) **The EFEA should guarantee adequate and predictable budget allocations for public authorities with environmental mandates.**

The first step is to consolidate and reorganise all existing environmentally related expenditure items—currently administered under different arrangements in various agencies—under a unified budget administration system. Regular public consumption on environmental protection should be aimed at enhancing the capacity of environmental administration.

(2) **Environmental financing under the EFEA should address environmental problems that have a clear national dimension, or where the environmental costs or benefits span several jurisdictions.**

These would include: investments in monitoring of trans-jurisdictional air and water pollution; emergency handling of environmental hazards and disasters; environmental education and

scientific research programmes; implementation of international environment conventions etc..

- (3) **Fiscal transfer payments for environmental protection should be determined in accordance with the principles of distributional justice and ‘common but differentiated responsibility’.** Fiscal support from the centre is justified, namely where polluters are too poor to invest in effective pollution treatment and control, or where low-income levels give rise to affordability constraints in terms of payment for environmental services. The implication is that **transfer payments to low-income or less developed areas that are environmentally significant** should be prioritised.
- (4) **Environmental expenditures should be coordinated with public spending programs on poverty alleviation in order to exploit win-win opportunities**—Taking an integrated approach to public interventions on environment and poverty reduction will increase the effectiveness and efficiency of public spending on these two goals, particularly where environment-poverty interactions are strong. Large environmental expenditure programmes should be systematically scrutinised for their impacts on the environment and on the poor.

3) Develop a Systematic and Consistent Approach to Environmental Pricing and Taxation Reform

The chief purpose of environmental pricing and taxation policies should be to compensate for the failure of market forces to adequately reflect environmental costs in prices. But this cannot and should not be accomplished overnight. Adoption of **“second best” solutions** will frequently

be required, particularly where administrative costs associated with ‘ideal’ instruments are prohibitive or data requirements unrealistic. Furthermore **price increases need be implemented gradually**, in tandem with the overall pace of change especially when the end-prices will increase significantly. Considerations of social equity reinforce this conclusion. Finally suggested **reforms must be properly sequenced**. The role of new taxes should only be considered after *existing* taxes/charges have been reformed and rationalised, and environmentally harmful subsidies eliminated. The usual recommendation would be to start with areas where win-win opportunities are largest and to be opportunistic, i.e. by building upon existing structures and synergies with ongoing reforms. In light of these considerations we recommend the following:

- (1) **Greening the taxation system the situation**—is not mature for introducing new environmental taxes such as the sulphur tax or the CO₂ tax. However opportunities currently exist for integrating environmental considerations into mainstream tax reforms, particularly where such considerations strengthen the achievement of reform objectives. This Task Force identifies concrete opportunities in fuel tax reform, and in revisions to natural resource and product taxes (elaborated below). The suggested interventions imply very little administrative changes since they build on existing structure. More generally SEPA should lend political and technical support to policies that involve increasing prices of subsidised natural resources.
- (2) **Strengthening the scientific basis for environmental valuation** — Regulatory agencies must develop the capacity to evaluate

environmental damage costs and ensure these costs are passed on to end users. This hinges on the availability of environmental data and there is a strong requirement for the development of a comprehensive environmental information management system to ensure authoritative release of environmental information.

- (3) **Public utility pricing should be based on long run marginal opportunity costs subject to technical and affordability constraints**—Where low income levels mean that affordability constraints do not allow full-cost recovery then *central fiscal support may be needed to adjust pricing schemes*. For example, by lowering construction costs central grant financing should reflect in lower prices for end users. Reconciling objectives of full cost recovery and affordability may thus require the coordinated use of expenditure and pricing instruments, implying the need for cooperation between different public agencies.
- (4) **Where some form of subsidy is justified, it must be time-bound and target-oriented**—By definition subsidies distort investment decisions. Where market forces work against adoption of environmentally friendly technologies, and where the existing system fails to allocate resources efficiently or equitably some form of subsidisation may be required. Subsidies can also reinforce pro-poor aspects of EFIs. However, in all cases the *rationale for subsidisation should be re-evaluated regularly* to ensure that the subsidies do not continue after they are no longer needed.

V. Conclusion

The present government faces an historic opportunity for promoting the development of a comprehensive environmental fiscal system. In line with previous recommendations this task force has made to the Chinese government, it is proposed that as far as possible the real economic and social costs of pollution and environmental degradation should be reflected in the prices charged for the use of environmental and natural resources. There is also an urgent need to rectify structural imbalances in the allocation of fiscal resources to address a range of environmental concerns.

The transition to a situation in which environmental costs are fully reflected in national, provincial, and local fiscal systems will have to be gradual, in particular to ensure that such reforms are not detrimental to the wellbeing of the poorest segments of society. In the early phases central fiscal support may be required to: (i) promote the development of markets for environmental services; (ii) rectify regional imbalances in the allocation of fiscal resources for environmental protection, and; (iii) address distributional concerns.

The findings reported here apply not only to the specific issues addressed in this summary, which are directly relevant for urban problems but are of more general relevance to the way in which a wide range of environmental and natural resource issues should be handled.

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By reviewing the current application of Environmental Fiscal Instruments in China, existing policy gaps and weakness, and the feasibility of using EFIs in China, this paper pointed out that the Chinese government faces an historic opportunity for promoting the development of a comprehensive environmental fiscal system. It is proposed that as far as possible the real economic and social costs of pollution and environmental degradation should be reflected in the prices charged for the use of environmental and natural resources. Chinese government should systematize existing environmental fiscal funds and policies, gradually setting up a framework for integrating environmental fiscal instruments into the public financial system.

Keywords: Environmental Fiscal Instrument (EFI),
Environmental Fiscal Reform, China Market Failure