

# *Constraints to the Use of Economic Instruments*

***Questionnaires Referred to  
in the Synthesis Paper***

## Dutch questionnaire

The following economic instruments were put into place in the Netherlands in the energy sector with the following objectives:

- *A regulatory tax on lead in gasoline*, aimed to phase out lead in gasoline. Revenues from this tax are at present close to zero.
- *A fuel tax over and above excise duties*, that is a remainder of a historical fuels charge to raise revenues and applies also to energy intensive industries. Its primary objective was to raise revenues to cover a wide range of governmental expenditures on the environment (monitoring environmental quality, planning).
- *A regulatory energy tax* that raises the cost of final energy demand. In spite of its name, the energy tax is fund raising and not regulating, granting exemptions and preferential low rates to energy intensive industries.

**The main factors that were taken into account to design the instruments are:** competitiveness; income distribution; possibilities for piggy backing on existing taxes; possibilities to define a solid, credible and enforceable tax base; and revenue-raising potential. None of these criteria was 'absolute' (i.e. a tax might have bad scores on one criteria as long as the overall package was considered to be politically acceptable).

Despite opposition by those who were to get to pay the tax, there has been no discussion about what kind of instrument should be employed, when the prime objective was fund raising. In some cases options to introduce taxes were abandoned. Fine-tuning of tariffs has improved environmental effectiveness without reducing revenues substantially.

**The regulatory entities that designed the instruments are:** on the one side, the Ministries of the Environment, Economic Affairs and Finance, the Ministry that has special responsibilities with respect to the energy sector, and specialised government agencies; and on the other hand, industry representatives. Proposals for greening the tax system were prepared by the "Green Tax Commission" that also includes academia and NGOs. Invariably, government and industry participated intensively. Environmental NGOs often took part in the political discussion that preceded concrete proposals.

**Many difficulties were encountered during the design process.** They often related to finding an appropriate tax base that is practicable, well targeted to capture the pollution and polluters only, runs little danger for internationally competing industries, and has no significant impact on income distribution. The latter sometimes has necessitated complex recycling mechanisms. Difficulties encountered during the implementation phase were mostly the strong opposition from the industry to taxes, and from drivers to fuel taxes.

**More generally, the following circumstances hinder the introduction of price-based instruments:** strong tradition in regulatory approaches; information asymmetry (business knowing it has the upper hand in negotiations on standards but not on taxes); political visibility encouraging the adoption of quick and dirty fixes; property rights issues. Three important drivers can overcome these barriers: 1) A strong political support for drastic measures is needed. Draconian regulation must be a credible threat. 2) Earmark taxes in the beginning, which eventually might be turned into genuine taxes. 3) Highlight the greater flexibility of price-based instruments compared to draconian regulations.

## Chinese questionnaire

In order to reduce agricultural pollution, protect the rural environment and increase the quality of agricultural products, the following policy package has been applied in the Jiangsu Province of China: integrated assessment and regulation of agricultural pollution; establishment of a Pest and Disease Prevention Service; *ban on the production, marketing and application of all high toxic, high residue pesticides*; investment in research and development of pesticide based on Chinese herbal medicine.

**The design and application of the policy package have been done within the following sequence:** Step 1 - An integrated assessment of current agricultural pollution, aiming to increase the policy maker's concern about agricultural pollution, and emphasizing the necessity for a regulation. Step 2 - Establishment of a Pest and Disease Prevention Service, an important institution to increase the efficiency of pesticide application and reduce environmental pollution. Step 3 - Ban on the production, marketing and application of all high toxic, high residue pesticides. Step 4 - Investment in research and development of pesticide based on Chinese herbal medicine.

There has been no discussion about the kind of instrument that should be used. The regulatory entities that designed the instrument are SEPA (State Environmental Protection Administration), the Ministry of Agriculture and Pesticides Factories. Only SEPA and the Ministry of Agriculture have been charged to implement and enforce the policy package. A shortage of coordination mechanisms among these agencies was faced.

**A number of difficulties were encountered during the design and the implementation process, including:** the ban caused a reduction of benefice for the Pesticides Factories; the Establishment of a Pest and Disease Prevention Service required the creation of a starting fund; in the short term, it has not been possible to replace all high toxic, high residue pesticides by pesticides based on Chinese herbal.

**Barriers faced during the implementation of the policy package include:** pesticide factories' opposition to the ban on production, marketing and application of all high toxic, high residue pesticides; weaknesses in institutional capacity hampering the implementation and enforcement of the policy package and especially the establishment of the Pest and Disease Prevention Service.

**In order to overcome the barriers** in the implementation and application of the instrument, the Government has encouraged the factories of pesticides to produce pesticide made by Chinese herbal medicine to instead all high toxic, high residue pesticides, and provides subsidy to the factories of pesticides for the ban.

Since the Pest and Disease Prevention Service experienced a failure in the past, due to a charge set higher than what farmers could accept, the government this time provided starting funds for its establishment. In addition, banks could provide the Service with low interest rate loans. Consequently, the Pest and Disease Prevention Service could buy pesticides from the Pesticides Factories at low prices and the pesticides charge standards could be set at a level acceptable by farmers. In order to ensure cooperation between stakeholders to achieve a more effective application of the policy package, a Working Group could be established between government bodies, that aims to develop coordination mechanisms among these agencies.

## Chilean questionnaire

A *transferable permit system* (STEP) has been developed in Chile with the objective of reaching a more cost effective reduction in emissions and effluents.

The development of this economic instrument was based on the mandate in the basic framework law as well as existing schemes in the US. While most of the existing economic instruments were introduced before the existence of the CONAMA, the development of the System of Transferable Emission Permits has been carried out in coordination with the CONAMA, which aim is to elaborate environmental policy instruments, and through public consultations. Hence, the case of STEP is the one that comes probably closest to a complete process of introduction. While no pilots or tests were realized for the adaptation of the instrument to national circumstances, application was analyzed for specific cases.

### **The process in general terms has been the following:**

- in 1994 the mandate for the elaboration of a general law for a STEP was included in the Basic Framework Law to the National Commission on Environment (CONAMA).
- in 1995, 1996 the CONAMA carried out a study of the potential implications, as well as the important technical, institutional, legal and economic issues regarding this instrument – also, a draft law was elaborated
- in 1996-1997 there were discussions in CONAMA as well as at the technical level of the other ministries regarding the usefulness and feasibility of such an instrument.
- in 1998 CONAMA carried out further studies on the applicability, focusing especially on the transformation of the existing compensation system for emissions within the metropolitan area as a feasible candidate for elaborating a more fully fledged STEP. A first version of the draft law was presented to the Council of Ministers.
- In 1999, 2000 CONAMA carried out discussions with the academic sector, the parliament, NGOs and business regarding their perceptions of this instrument and regarding specific comments to the draft law.
- In 2001 discussions keep on, but the law has been revised according to the observations and it is handed in to the parliament and senate.

**There has been a general lack of involvement of different actors** and especially the Finance Ministry in the development of economic instruments. The participative and coordination processes have to be improved urgently. A legal framework, a regulated procedure for the introduction of economic instruments as well as for the selection and comparison of different instruments should be developed. In addition, there should be sufficient political support to these instruments. Indeed, cultural resistance and lack of experience are much more pronounced with economic instruments than with traditional standards. Furthermore, economic instruments often require more administrative design, implying greater fear on behalf of the administration towards their use.

## **Brazilian questionnaire**

*Water charges for national rivers* are currently being introduced in Brazil, both for revenue generation and improvement in water quality parameters.

**They have been selected and developed as follows:** The executive sent a bill on the new water national management system to the National Congress in the beginning of the nineties. After a very participative debate it was approved in January 1997. The new law since the beginning was in favor of prices because it is largely based on the European experiences, particularly in France. Water charges and other river basin instruments (assembly, plans, etc) were introduced. Nowadays the debate is about how to implement them. Several states in Brazil also have their own water law covering state rivers and underground water. Some state laws were approved before the national one, but have not been implemented yet as they seem to be waiting for the implementation of the national law in order to then accommodate differences.

Due to the dual objectives of the instrument - revenue generation and improvement of the water quality -, pricing of the charge is facing a dilemma and still subject to debate today. The instruments are now being designed by the executive body, National Water Agency (ANA) and the policy body, the Secretariat of Water Resources, both linked to the Ministry of the Environment.

**The implementation of national criteria to guide river basin committees to apply the charge is facing technical and political problems,** because revenue and behavior criteria are not fully understood by the leading engineers. The industrial sector is very afraid of being the major payer if households and the agriculture sector find ways to exemption. Other dilemma is the level of charge to either raise revenue or change pattern uses against the effects on local economies. There are serious conflicts of jurisdiction between ANA and SRH, state, federal government and municipal interests. Criteria to distribute the resulting charge revenue is also carrying a great density of conflicts. This is mainly due to the fact that different political parties control each of these two institutions. Nevertheless, both are now trying to work together pressed by the “water community”.

**The water charge in Brazil seems to be following the most realistic development process** in terms of the Brazilian political and technical realities. Although more economics would be needed in the debate, reality of the use of economic instruments is quite different. More economics would mean more objective debate and therefore less degree of action for other political actors. The only contribution from an economic perspective is to offer integrated models of economic and hydrologic aspects to be applied in basins showing how pricing is affected by water availability and quality and vice-versa. Since engineers lack this skill they tend to overcome things like price and demand elasticities and firm's decisions on resource allocation through time and space.

## Philippines Questionnaire (1)

In order to generate revenues to augment the funds allocated by the government for the protection and conservation of the Mt. Makiling Forest Reserve (MFR), a package of economic instruments is being put into place. These include:

- *User Charges for the forest recreation and ecotourism areas.* The University has been collecting entrance fees at the Makiling Botanic Gardens (MBG) for several years. However, the rates were too low and did not generate enough revenues for the operating and maintenance costs of MBG. In 1999, the entrance and swimming fees at MBG were increased by 100% and entrance fees were imposed to the Makiling Rainforest Park.
- *User Charges for timber and non-timber forest products (NTFPS).* The current rates are deemed too low, especially those for NTFPS such as seeds, seedlings and palm leaves. A study showed that the prices of seeds and seedlings should be increased to reflect their real values. The seeds collected and seedlings raised are indigenous premium hardwood species usually not available in commercial nurseries.
- *A watershed protection fee* was set in MFR, based on data collected on the volume of water used by sector, the cost of managing the watershed and users' willingness-to-pay.
- *A land rent* is being designed for MFR in order to reflect the costs of land use, which are at present used by farmers to produce agricultural crops for free.

### **For each instrument, the following development process has been undertaken**

- Creation of task forces to develop MBIs for each purpose, and of a specific task force to study the institutional aspect of MBIs.
- Resource-pricing studies; data collection on willingness to pay (WTP), fee schedules and resource use; review of the Master Plan for MFR.
- Consultation meetings with concerned stakeholders.
- "National Consultation Meeting on Natural Resource Pricing in the Mt. Makiling Forest Reserve" with specific recommendations for each commodities.

**During the design phase**, discussions were held among team members and stakeholders about what instruments to employ. They involved, on the one hand the University of the Philippines - Los Baños (UPLB), the College of Economics and Management, the College of Public Affairs and the Resources, the Economics and Environment Center for Studies etc; and on the other hand, for the water sector, the water district, the Provincial Environment and Natural Resources Office, the National Power Corporation, the National Water Resources Board, industries, cooperatives etc; for forest recreation, visitors; for the non-Timber Forest Products, plant buyers, nursery owners and landscapers; and for land use, organizations and Barangay councils.

**A number of difficulties were encountered during the design process.** At first, some people whose benefits might be affected by the implementation of MBIs opposed them, arguing that the government itself should pay for the management of MFR. Later, while intending to pilot-test the watershed protection fee, the project encountered a legal problem: UPLB's mandate does not state that it can collect user fees for water, and the public-good nature of water makes it impossible to prevent people from using it. Nevertheless, the Makiling Center for Mountain Ecosystems (MCME) got the support for this project from major water user groups such as water districts, the National Power Corporation, private companies etc). Hence, it is about to get an Executive Order signed

by the President of the Republic, allowing UPLB to collect fees from water users around MFR. Afterward, the project should be replicated in two other watersheds in the country.

Another major barrier, faced during the implementation, was the initial opposition of visitors to higher entrance & swimming fees. However, it lasted a few months only. One water district and some local government officials resisted the use of water management fees, but most stakeholders supported it. Information campaigns are being developed.

With regards to institutional capacity, the major problem faced related to the lack of specific guidelines on the use of MBIs for resource management. Although mentioned in the Philippine Agenda 21, yet no specific policies have been developed to empower the collection of fees from resource users. To overcome this barrier, MCME is working with a Presidential Task Force on Water Resources Development and Management.

**Results and lessons learned.** Improvement in environmental efficacy was achieved through the introduction of economic instruments for forest recreation and tourism. In spite of the 100% increase in fees, the number of visitors to MBG did not vary. This is mainly due to the fact that the old rates were very low compared with those of similar recreational activities. This is also due to the fact that an overall policy was in place already, that fees are easy to collect at the entry point, that MBG and MRP have high recreational and ecotourism values, and that aggressive marketing and media promotion activities were conducted. Consequently, the annual incomes of MBG beginning 1999 are much higher than before (1,670,105 P in 2000 and 579,229 P in 1998).

In order to improve the success encountered by the implemented or forthcoming economic instruments, the following should be done differently: work on the legal basis should be done before designing MBIs; the government should institutionalize the use of MBIs as tools in natural resources management; information and educational campaigns should be developed; more actors should be involved in a proactive role, such as the National Economic and Development Authority, the Department of Environment and Natural Resources etc.

## Philippines Questionnaire (2)

Forest Management Bureau, Department of Environment and Natural Resources  
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Three main economic instruments have been applied in the country, aiming at increasing the funds allocated by the government to forest resources management:

- *Forest charges on timber and other forest products* cut in forestlands, which is 25 % of the freight on board (FOB) market price per cubic meter;
- *Government share from Industrial Forest Management Agreement* based on rental performance bond;
- *Government share from the use of forest lands for energy purposes.*

**The design process undertaken** for the first two instruments is the same, wherein a formulation and issuance of a policy came first before a review or study to this effect was done. For the third one, the study came first, followed by discussions with various energy stakeholders, until a law through a Department Administrative Order was formulated. The agency that designed the instrument is the Department of Environment and Natural Resources. Socio-economic and environmental benefits derived, were the main factors considered. There has been a discussion about the instrument that should be employed, between the Department staff and later a technical review panel, with representatives from government agencies and private units like the Philippine National Oil Company.

**As for the legal framework required for each instruments**, it is the following: While the 7161 Republic Act gave the Department the authority to collect forest charges, Department Administrative Order No. 18 was issued in 1993 to prescribe the revision of forestry administrative fees. Department Administrative Order No. 60 was also promulgated in 1993 to encourage the private sector enter into a contract agreement with the Department of Environment and Natural Resources, to manage industrial forests.

No pilot was conducted for the forest charges nor the collection of government share from Industrial Forest Management Agreement. The sharing scheme for the use of forestlands for energy purposes was pilot-tested in selected areas in the country. Problems were encountered in gathering data relative to the design process.

**Barriers were encountered and more or less successfully overcome during the implementation phase.** Lack of training for field staff was the main barrier, which concerned in particular field implementers having difficulties to identify species and assign appropriate grades to forest timber. This was partially overcome by providing them with orientation training. Weakness that was felt in the institutional capacity was related to the fact that several provisions of the policy do not conform to the present situation. This is especially due to the change in the leadership of the country and the agency, and the fast turnover of staff due to promotion. In order to overcome these barriers, the current Administrative Order was reviewed and amended, and intensive monitoring was conducted in the field.

The Philippine Wood Producers Association opposed the relative high forest charges. The implementation of sharing from Industrial Forest Management Agreement faced no problem.

The implementation of the economic instrument was proper and successful, as the increase in collection shows. **In order to improve this success, the modalities of the economic instrument could be modified.** Forest charges should not be based purely on logs because the volume of materials wasted before it is converted into sawn lumber needs to be taken into account; they should not be limited to six non-timber forest products only. Intensive information and education should be put into place so that the stakeholders be aware of what the Department is doing. Other actors such as the private sector, the industry and the consumers, should be involved in the process in order to ensure their cooperation and achieve a more effective implementation. In order to do so, a committee could be created, which could involve the Department of Environment and Natural Resources, the private sector and other government agencies like the National Economic and Development Authority and the Department of Trade and Industry.

## Philippines Questionnaire (3)

National Water Resources Board

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*Water fees and charges* have been introduced in the Philippines with the specific objectives of generating revenue and minimizing water wastage.

**Steps that were followed in the design and application of this instrument can be summarized as follows:** Consolidation, review and validation of all water laws which were prevalent in almost every chapter of every water resources agencies; Public hearing; Drafting of policy; Presentation of draft policy; Formulation of law; Implementation.

The legal framework required for the water fees and charges is the “Water Code of the Philippines” (Presidential Decree No. 1067). It embodies laws governing the ownership, utilization, exploitation, development, conservation and protection of water resources.

The institution which designed the instrument, the National Water Resources Board (NWRB), is also the one in charge of its implementation and enforcement. The design process involved different water resources agencies and the public, and encountered no particular difficulty because the proposed water fees and charges were small. Pilots were first realized in 12 regions of the country. Two agencies - the Department of Public Works and Highway and the Water Districts - assist the Board in monitoring, inspecting and processing the permits of water appropriators. A modest incentive is given to Public Works and Highway but none for Water Districts.

**Barriers faced during the implementation of the instrument include** the difficulty to trace the original permits, the non-payment of fees and the proliferation of illegal water appropriators. No general opposition was felt since the charge imposed was minimal. However, if the fees were to be increased, irrigators would certainly oppose them.

Weakness in the institutional capacity was felt with regards to two issues. The first one is the monitoring of about 70,000 permits throughout the country. The Board, however, is now saddled with problems in determining how many are still active. The second weakness is field verification, as data available in the Board do not reconcile with data provided by local government units. Both problems are mainly due to lack of human capacity, which could be overcome by seeking assistance from local government units and other agencies, and developing a data base. To this aim, additional funds should be provided to the Board for the efficient implementation of its activities.

**Results and lessons learned.** Partial success has been achieved in the payment collection and enforcement of water charges. Success could have been greater if information and education campaigns had been sustained, and enough budget and personnel had been available. It is important to conduct a public hearing and to involve in a proactive role the Department of Public Works and Highway, the National Irrigation Administration and the Water Districts. To this aim, a Memorandum of Agreement among the actors involved could be useful. Furthermore, personnel from the Water District should be deputized by the NWRB to help achieve a more effective application of the instrument.

## Tanzanian Questionnaire

Development of economic instruments has been recently promoted in Tanzania by the concern that command-and-control measures had not succeeded in mitigating environmental problems, and that polluters should pay for their environmental damages. Several economic instruments are used nowadays, which aim to encourage eco-sound practices, to raise revenue and to mitigate environmental damage. *Cost covering charges* including water treatment charges and earmarked charges, *incentive taxes and fiscal environmental taxes*, aim to raise revenue for environmental conservation. *Lower taxes on eco-friendly technologies and higher taxes on environmentally damaging processes* are also applied. *Maximum rates of excise duties and import duties* are applied to prevent environmental bad goods from entering the country. *Fertilizers and agrochemicals are taxed*. In sensible areas where traditional livestock is dominant, *a tax per cow* is used to discourage farmers from keeping too many cows, which are a major cause of soil erosion. *Fees, user charges and royalties fines regulate the use of natural resources* (forest, fisheries and water).

**The design process is as follows.** Economic instruments are adopted through laws and by-laws in the case of local governments. Recommendations come from the relevant authorities (i.e the ministry department or the local government); they must be submitted to the Minister responsible for approval, published in the Government Gazette and approved by the Parliament.

**There is no general set of government policy or law guiding the implementation of economic instruments.** The Ministry of Finance is the central body, which coordinates all agencies involved. It is responsible for managing the economic, fiscal and policy issues, as well as for formulating policies and managing the use of revenue. It works closely with other Ministries and institutions, especially with regards to revenue collection and monitoring for which it issues operational manuals, guidelines and Financial Orders. For instance, the Forest Ordinance CAP 38 of 1957 empowers the Ministry responsible for forest management to collect revenues in the form of forest fees, penalties, hunting licenses and others.

Since discussions have already been held on which kind of instruments should be adopted for this purposes, Town Councils now usually quickly adopt waste collection charges to regulate waste disposal. Dar-es Salaam City Council already adopted waste charges, while the use of other instruments is still being debated. Since the city is divided into three municipals, pilot testing was first done in one, and replicated later in the two others.

**Several barriers were encountered during the implementation of economic instruments.** Problems of coordination were a main one, especially in the forest sector where both the central and local governments are involved. Lack of proper records of levy/fees/taxes payers, inadequate and incompetent staff, low morale of the workforce in charge of non-tax revenue, absence of efficient machinery to follow-up on defaulters, poor internal control and lack of work facilities were also faced.

In areas involving more than one institution, the implementation of economic instruments was difficult because each body pursued its own objectives. In particular, some aimed at revenue collection while others aimed at regulating the use of resources. Problems of

retention and plough back were also faced, because in some areas the revenue collected did not cover the environmental damages. Discussions amongst stakeholders have been a major way to solve these problems. In the forest sector for instance, the forest department and regional natural resource officers met with local government leaders to solve emerging problems. Nevertheless, success was mitigated.

**Results and lessons learned.** Although studies are recent and need careful interpretation, they seem to prove the use of economic instruments effective. Through the introduction of a “pay as you use system”, large users of water now pay more tariffs than smaller ones, and large manufacturers start recycling water.

In order to enhance environmental efficacy, policy objectives should be determined beforehand, whereby the biggest challenge is to balance revenue collection and environmental conservation objectives. The current institutional, legal and regulatory framework should be assessed and taken into account when choosing an economic instruments. Management of natural resources should fall under the power of a single institution, and laws and regulations should be streamlined so as to allow for a greater stakeholders’ participation in the design and use of instruments. Finally, capacity building is required for policy makers before any attempt of implementation.

## German Questionnaire

Increasing use has been made for some years now, of economic instruments in addition to standard administrative law, aiming to promote environmental protection and efficacy. In public discussion, attention is focused primarily on *provisions for taxes, duties and fees*. These include multi-sectoral energy taxes (mineral oil, electricity taxes), taxes that take account of sector-specific environmental policy perspectives, and environmental levies. In addition, efforts have been made to reduce subsidies in certain sectors.

**Design and implementation of each instrument generally followed the same steps:** initiation of the process by politicians, ministries and relevant stakeholders; law/ordinance drafted by the relevant ministry, accompanied by informal discussions with other ministries, states and stakeholders; discussions involving the government, later the 16 states, other stakeholders and finally both Chambers of Parliament; adoption of the revised law/ordinance. Indeed, the German Constitution requires taxes to be imposed by law and thus to be approved by the Chambers of Parliament. For other instruments, special authorization to impose regulations can be delivered to the Federal Government.

The instrument design process usually encompasses discussions between relevant ministries, states and stakeholders groups (industry, trade unions, NGOs etc). Factors considered include environmental and economic efficiency, income distribution, industry competitiveness, enforcement and shift of revenues. In the case of regulation for drink packaging for instance, heated high-level and working-level discussions were held over years, supported by several studies.

Implementation and monitoring of the instruments are ensured by the 16 states in most areas of environmental policy (water, air, nature conservation etc). Coordination meetings are also regularly held between the states and the Federal Government.

**Several difficulties and barriers were encountered throughout the process.** Although difficulties vary from case to case, the most important ones faced during the design phase were the two following: acceptance from consumers or the industry, particularly when the implementation of an instrument might reduce their income; and finding an adequate calibration for a tax or other levies.

The main barrier faced during the implementation phase was public opposition to new taxes, from the industry and sometimes from consumers. In addition, there is a general lack of manpower for enforcement. Local and regional authorities are more used to regulatory approaches, and lack of coherence between environmental and finance authorities can hamper implementation and monitoring of tax-based regulations. In order to overcome these problems, regular talks have been held with state officials and local authorities. In some cases difficulties were taken into account in the design process in order to create solutions, which are easier to implement and to monitor.

**Lessons learnt.** Scientific studies and experiences from other countries could help better understand the actual use and impacts of environmental economic instruments. Relevant international organisations and scientific committees could be involved in the design and implementation process in a proactive role.

Assessing the costs and benefits of the use of economic instruments for the relevant stakeholder groups, and making these results transparent and publicly available (including threat of more drastic regulations, ways to lower taxes etc.) could help ensure stakeholders' cooperation and achieve a more effective application of these instruments.

## Argentine Questionnaire

Economic instruments have been part of public policy for over two decades, and user fees have been paid for the extraction of some natural resources in public domain for much longer than that. This survey only touches upon some sorts of economic instruments for environmental management that have been designed and/or implemented in the country: *charge systems, effluent charges, access fees (ITQs, access to natural areas/parks), financial instruments, financial aid for new technology, fiscal instruments, subsidies, financial aid for R&D and pollution taxes.*

**The process that was followed in the design and application of these instruments** has varied greatly. For older instruments, a norm has been established that implements market-based instruments without much debate and/or study. More recent instruments were founded on the need to meet international guidelines or conditionality. The objectives specified for each instrument were revenue generation, improvement in environmental quality, natural resources management, establishment of access rights and compliance with international norms. The legal framework required to design and implement them was Federal laws and adhesion by provinces where necessary.

The regulatory entities that designed the instruments were federal environment agencies, line ministries and the Parliament, with the participation of these bodies' political and technical staff as well as interest groups. Several regulatory entities were in charge of the implementation of the instruments, within a coordination process where necessary.

**Problems faced during the implementation** include the following: resistance by some agencies in the federal and sub-federal governments; lack of technical knowledge especially concerning innovative measures; resistance to "pay" for natural resources considered "free"; opposition by interest groups; perception that the country is disadvantaged on the international market if it is the only one using such instruments.

In order to overcome these difficulties, semi public debates, parliamentary debates and other types of non-binding participation programs were held. Research and training, as well as international support also contributed to overcome the barriers.

**Results and assessment.** Although there is no one-by-one analysis on the effectiveness of these instruments, the general feeling for many of them is that they were not very cost-effective nor environmentally efficient.

A major failure and difficulty to measure the efficacy of market-based instruments, is that revenue collected often culminates in general treasury funds, their use for environmental or sustainable development therefore not being measured. Furthermore, a general judgement indicates that the revenue levied is rather minimal when compared to the value of the resource or the environmental damage. Thus, the efficiency of the instrument in broad terms is many times doubtful.

**Lessons learnt.** Thorough knowledge of each instrument through the involvement of academics, proficient baseline data (environmental, social and economic) and clear policy outcome purposes constitute the minimum requirements. In order to ensure the cooperation of other actors and achieve a more effective application of the instrument, the

following should be enhanced: research on market-based instruments as applicable to the country; training or informational seminars for disseminating these tools; and training of officials in these areas.

## Nigerian Questionnaire

As contained in Agenda 21, Nigeria plans to put in place economic instruments and incentives in the management of the environment and natural resources, in order to promote rapid economic growth and improvement in individual welfare on a sustainable basis. While encouraging the participation of stakeholders in the management, harvesting and utilization of revenue arising from the use of natural resources, the National Policy on Environment document recommends the use of several economic instruments.

It notably suggests to use *penalty taxes, fines and charges for non-compliance to environmental standards and regulations*. In order to reach appropriate pricing as well as optimal allocation, production and consumption of natural resources, the document promotes *tax relief* encouraging investment in pollution abatements. This encompasses: grant of accelerated depreciation allowance and removal of import duty on abatement equipment; grant of tax holiday and pioneer status to eco-sound new projects; and other tax credit schemes. The National Policy on Environment document also recommends the use of *charges and taxes on the extraction of resources* to discourage their over-exploitation and inefficient use. It requires the submission of *performance bonds* to insure industries' compliance with resources extraction rules. It allows, when appropriate, the *direct transfers of financial assistance (subsidies)* in order to compensate specific groups which may suffer additional costs in complying with standards, and to encourage groups improve their environment especially where conservation initiative affects their income. It proposes to develop a *compensation framework for environmental damage* as well as *insurance schemes and other risks management processes* in remediation and restoration of damaged areas. Finally, it encourages the *payment of financial contributions to relevant international environmental organisations*.

**The design of economic instruments** is generally made by the Federal Environment Protection Agency (FEPA) which was established in 1989, the State Agencies and Ministry of Environment. However, there is most likely a wide disparity among the 36 States and the Federal Capital Authority, Abuja.

**Results and lessons learned.** Economic instruments are fairly new and thus still seldom used in Nigeria. For instance, although a few states such as Lagos State, compel some companies to bury their wastes, they do not yet place any charges or penalties on them. The use of economic instruments is mainly limited to oil producing areas and few cities of Lagos and Abuja. In most cases the objective is not to generate revenue but to protect the environment.

No analysis is available to date on the use of economic instruments in Nigeria. A detailed study is therefore required to reveal the costs, benefits and the impacts of these instruments. Furthermore, a training workshop on economic instruments formulation, development, implementation and assessment could be organised at the regional level for researchers and policy-makers.

