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Optional Course Essay

Environmental Economics-Ecological Economics
Perspective

Cost-effectiveness of pollution control measures in
Tanzania

-Case of Green House Gases (GHGs) emissions in Tanzania

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1.0 Introduction

Green house gases are key crisis facing a world and have been a theme of debate for several years. Many countries have imposed a range of measures to cut down the emissions of green house gases (GHGs) from industries and other sources to lessen pollution. Measures include, Environmental taxes (e.g. green tax), Permits (e.g. tradable permit, and grandfathered permit), and Tax relief and Subsidies. The methods have been extensively used but experience shows that not all were able to regulate emission economically. The Cost Benefit of these methods is seemingly confusing. Above all, international treaties such as Kyoto Protocol were implemented calculatedly to curb emissions by countries though they face resistance by key emitters like US.

Tanzania, like many other developing countries, has a role to play in this move. Economic advancement such as industrialization which in most cases includes use of environmental unfriendly technology, and unsustainable use of forest resources such as cutting trees has been a major source of green house gases. Yet still the penal laws such as environmental laws and environmental regulation are used as main control measures, but it is argued that these instruments can not efficiently regulate emission in the country. The recommended supplementary regulators are economic-oriented such as green taxes, and subsidies. Economic efficiency theory suggests that the polluters (firm, individual or government) should pay full cost of environmental damage (e.g. GHGs emission) caused by its activity. This is expected to create incentives for the reduction of such damage at least to the level where the marginal cost is equal to the damage caused by such damage (Turner, Pearce and Bateman, 1994: 46). In this brief essay I intend to look at the feasibility of green tax scheme as a recommended emission control instrument in Tanzania. The following sections describe briefly the emission situation in the country, the emission control measures, policy and green taxation in Tanzania, constraints, and the last section is the conclusion.

2.0 Discussion

2.1 EMISSION SITUATION IN TANZANIA

Development and Emission

Economic development, it is argued here, has been and still a biggest threat to environment. "The bigger the economy gets, the more waste will be produced to the environment which has a very limited capability to absorb them, then the real possibility emerges that there is a limited to expansion to economy" (Turner, Pearce and Bateman, 1994: 41). However the relationship between economic growth and environmental degradation is very complicate and sometimes it is considerably difficult to make a clear comparison. "If economic growth inevitably leads to environmental pollution, we should expect that the richest economies have the poorest environment, but this is obviously not the case, we now witness the lowest economies experiences environment degradation at an alarming rate" (Hodge, 1995: 23). For the past few years, Tanzania's economy grew considerably (up to 6 % a year) due to factors such as reform of investment policy, privatization, and joint ventures. I will discuss some of these factors in the following sections to begin let me briefly link industries and emission in Tanzania.

Industrialization has resulted in the intensive exploitation of fossil fuels (coal, gas and oil) to produce energy for production and transportation (Ibid). Industrialization which is believed to be a sign of many nations' development has not been high in Tanzania. There are only few production industries in Tanzania. Industries include, cement, wood products, agricultural processing (sugar, beer, cigarettes, sisal twine), diamond, gold and iron mining, soda ash, oil refining, shoes, apparel, fertilizer, and salt. The greenhouse gas emission in Tanzania is not attributed by few numbers of industries operating but the use of obsolete technologies by these industries (ESSD, 1992)

As it was pointed out earlier, many industries are not clean in terms of environmental protections. Although the contribution to global GHGs emission by Tanzania's industries is insignificant (almost not accounted) but due to a rapid growth of the sector and the concept of Clean Development Mechanism (CDM) it is then idyllic to consider industrialization and greenhouse gas emission in Tanzania. "Social and economic development must be undertaken in such a way as to minimize the effects of economic activity on environment whenever the costs are borne by future generations" (Turner, Pearce and Bateman, 1994: 54). Wood industries consume trees which are important for CO₂ storage. It is estimated that more than 40% of the CO₂ is stored in the forests. Worse enough the reforestation is not well practiced and illegal lumbering is increasing. Fertilizer, oil, cement, and mining industries are also not green.

Outdated technologies used by production factories contribute to global greenhouse gas emissions and currently Tanzania has witnessed the outcomes of the global climate change in the country such as; the melting of Mount Kilimanjaro snow (snowed and highest mountain in Africa), drying up of many rivers, and highest rate of desertification in many parts of the country. Efforts to achieve economic development are therefore have to be supplemented by the exploitation of modern industrial technology in order to limit greenhouse gas emission by industries in Tanzania. There are a lot of setbacks to this challenge which will be discussed in the last section of this essay. To mention, the major constraints are financial, policy, and corruption.

Poverty and emission

Tanzania is one of the poorest countries in the world with more than 50% of the population living under 1USD (ESSD, 1992). Approximately 85% of the population depend on agriculture for their living and more than 80% resides in the rural areas. Many people entirely rely on natural resources for food, energy and other purposes. This has created problems to environment such as global warming due to the unsustainable utilization of trees for energy. To a larger extent deforestation has been contributed by utilization of forests trees for energy in Tanzania. Many parts of Tanzania such as; Shinyanga, Dodoma, Tabora, Manyara, Singida, Morogoro, Kilimanjaro and some parts of Iringa region are now deserts due to high rate of cutting trees for charcoal. As pointed out in the last section forests are important instruments for CO₂ storage. Cutting forests will leave the gas in the atmosphere and contribute to the global CO₂ concentration.

Poverty, as it can be seen from many perspectives; poverty can constitute a lack of alternatives for life sustenance, therefore, in this scope, people can opt for an immediate

available ways such as unsustainable use of forests resources. Also poverty can be viewed as a loop hole in which people can be manipulated to let the resources be exploited unsustainable; for example when proposed unfriendly environmental undertaking is to be constructed near the local people's residents. Although green house gases emission contributed by traditional charcoal burning is apparently low, it is important to cite that the situation is getting worse and attempts such as promotion of the exploitation of alternative energy (green energy) by local people is indispensable.(LEAT, 2006)

Reducing GHGs emission exploits also the promotion of sustainable development which must also be supported by appropriate policies. " Sustainable livelihood can only be promoted via policies which reduce vulnerability such as flood protection to guard against sea-level rise induced by climate change due to global warming" (Turner, Pearce and Bateman, 1994: 58) . Poverty is a huge challenge which can not solved easily. Multidisciplinary approaches⁵ to global green house gases emission must to a large part embrace efforts to combat poverty.

2.2 POLLUTION CONTROL MEASURES IN TANZANIA

As it was pointed out in the introduction notes, currently, pollution regulations in Tanzania are based only on general environmental protection instruments which are penal laws such as environmental laws, and subsidiary regulations (environmental regulations). These are old protection mechanisms and have been used to solve environmental disputes since and before independency. It is again emphasized that, these mechanisms seems to be lacking power to deal with emission issues effectively. For effective emission regulation in Tanzania, economic instrument are highly recommended. In this section I discuss the emission regulation methods in Tanzania both currently and proposed methods.

Environmental laws

According to LEAT, there are two sources of environmental laws in Tanzania which are the common laws and statutory laws in the form of principle and subsidiary legislations. Common laws are rules of laws developed by the courts over time in the pre and post colonial time, and principle legislations are those developed by the parliament due to some weaknesses of common laws. Only few environmental laws have a direct focus on pollution control in Tanzania. They are therefore claimed to be outdated and new proposed mechanisms are recommended to cope with the economic growth in the country.

Environmental regulations

In addition to environmental laws, there are form of regulations that have force of law which are issued by the competent authority in the country such as Minister of a specific ministry like Ministry of Natural Resource and Tourism. These are called Environmental regulations. These forms of law have been in a few cases used to regulate some activities which were thought to have some adverse impact on the environment such as

emissions, which include controls of the illegal use of forest resource, and pollution from industries which are operating near resident's areas.

Environmental Impact Assessment

Environmental Impact Assessment (EIA), have recently been applied in a few undertakings most of them have some elements of donors involvement such as IMF or WB (LEAT, 2006). Currently there is no obligatory use of EIA in any activities in Tanzania as EIA policy is not yet implemented in the National Environmental Policy. As far as GHGs emission is concerned, implementation of EIA is inevitable decision due to the industrial growth and increase in the use of energy. At present, the country is examining the feasibility of implementing EIA in its National Environmental Policy.

Permits

Tanzania, like many other developing countries have not extensively employed environmental permits to regulate environmental emissions and other environmental problems. According to LEAT, in Tanzania environmental standards have been set only for specific permissible pollution for the environment. Environmental standard are divided into three. One is the specification standards which are aiming at controlling the activities of certain firms which seems to cause pollution to the environment by ensuring that they comply with a number of pre-determined standards. Second are the ambient and receptor standards which entirely seek to limit the effects of discharges on the environment, and the last is the emission standards which mainly concentrate on setting certain standards for permissible emission by considering the level of the harm of the emissions. Seldom emission standards are used for regulating GHGs emission in the country; they are only used to control other environmental pollution like water pollution.

As far as GHGs emission is concerned, permits which are tradable like those applied in many developed countries (e.g. Grandfathered permit which is applied in the USA) are believed to be efficient than other forms of emission regulation measures (Turner, Pearce and Bateman, 1994) . However, it is argued here that, in developing world tradable permits which in most cases characterized by a system of dialogue between the governing authority and emitters on the amount of permissible emission by the industries are not applicable due to a number of reasons. First, there is lack of capacity to set and monitor standards, and second weak policies to control the whole process. The last reason could be the least contribution on global GHGs emission compared with many developed countries. It is worthwhile to say that, tradable permits are credible in the developed world and a few exceptional developing countries such as China and India because of their massive GHGs emission and high lobbying power of energy intensive firms (Kolstad, 2000: 155). In Tanzania, permits can only be credible if technology would be applied to measure and monitor the level of emissions in the country which is actually currently not practiced.

Green Taxation

Green taxation has been used in many parts of the world to regulate emissions. However, it has been claimed that , green taxes (especially in Europe) are in most cases

not effectively control environmental pollution due to the fact that the money collected from green taxation are actually used to fund other issues but not direct focusing on GHGs (Turner, Pearce and Bateman, 1994: 179). In Tanzania green taxation is currently not practised to regulate GHGs emission. "It is now proposed that for effective emission control in the country green taxes should be implemented to supplement the penal laws and old environmental protection mechanisms" (LEAT, 2006). From economic point of view, economists believed that taxes would enable the polluter to choose how to adjust to the environment quality standards (Turner, Pearce and Bateman, 1994: 44). However, as a proposed emission control mechanism, the feasibility of green taxation is increasingly controversial. I can argue here that, as green taxation already proved difficulties in places like Europe where its control is efficiently, its application in Tanzania needs a comprehensive feasibility study while considering other factors such as good governance, strong policies, and reliable technology. In the following section I discuss the policy issues with regard to green taxation in Tanzania.

2.3 POLICY AND GREEN TAXATION IN TANZANIA

National Environmental Policy

National environmental policy of 1997 has a number of objectives including the prevention and control pollution of the air such as setting standards for emission control. The policy identifies activities which can cause pollution to the environment such as mining, deforestation, transportation, and industrial productions. Also it aims at promoting energy efficiency programmes and developing alternative energy sources. From green taxation standpoint, one of the policy priorities is implementation of National Action Plan to improve cleaner production in industries and abatement of pollution. It also criticizes the mechanisms to safeguard the cleaner production through incentive mechanisms and economic instruments including green taxation (NEP, 1997). In addition to National Environmental Policy, the National Environmental Action Programme of 1994 proposes the implementation and the use of the taxes on air pollution control, and other environmental problems such as water pollution and waste disposal management. (LEAT, 2005)

It is a common rule to say that, green tax scheme is not much explicated in the National Environmental Policy which raises much worry on its feasibility and needs for GHGs emission control in the country. Green taxes in Tanzania needs a clear policy which can, from economic point of view, guide the overall process of its development, implementation, and monitoring. It should also be remembered that, for the country with a record of low policy compliant, low level of commitments and non-stringent policies like Tanzania, the introduction of new mechanisms needs critical multilateral approaches to ensure their efficacy.

Other policies

Some other policies also have direct or indirect influence on GHGs emission and green taxation in general. To mention few, policies include; Transport, Investment, and National Energy Policy. These policies and their impacts on green taxes and GHGs emissions are briefly explained below;

Transport Policy

“Transportation sector is one of the major causes of GHGs emission in the country” (NTP, 2003). The sector is growing dramatically and uncontrolled importation of used car and ships increases the danger of emission of more GHGs in the country. The transportation policy identifies the number of measures regarding the control of emission but it neither mention the use of green taxes for domestic car users nor the control of importation of used cars.

Investment Policy

“National investment policy aims at promoting both foreign and domestic investors in the country in various sectors such as; mineral, transport, industries, and trade” (NIP, 1996). It is reminded here; the promotion of investment has gone together with the tax reduction mainly to attract foreign investors. This, together with the absence of clear EIA requirements and high level of corruption contributed to the implementation and operation of DFIs without binding to the clean production mechanisms which in most cases led to the increase of environmental problems such as GHGs emission in the country.

Energy Policy of Tanzania

The energy demand for both commercial and domestic use is increasing in Tanzania. There are different sources of energy in Tanzania which includes forests, coal, hydroelectric power, biomass, and petroleum. As pointed out, a large part of Tanzania’s population live under poverty, electricity is more costly for them; therefore the sole energy used by many people is entirely wood from forests. Large part of the country is now desert due to extensive forests destruction. “The energy policy has a number of objectives which include the promotion of the use of alternative energy such as coal which has minimum impacts on the environment” (EPT, 1992). As a rule of thumb, lack of enforcement, empowerment, and other factors slows the process.

Green taxes for low and energy intensive firms are not mentioned in the National Energy policy. It is again emphasized that, the problem of GHGs emission in most developing countries is new and seems to be insignificant.

Policy changes?

Green taxes appear in theory to possess several attractive attributes but settings an optimal tax in practice is difficult (Turner, Pearce and Bateman, 1994). In this section I amass the discussions about the policy made above to see if there are necessary requirements of policy reforms to ensure effective implementation of green taxation for effectual control of GHGs emission in Tanzania.

As pointed out, stringent policies are crucial instruments if green taxes are to function economically and fairly. In Tanzania policy such as; environmental, mining, industrial, water, investment, wildlife, and fisheries all aims at well being of the environment. However it is noticed that, they are not economically-oriented as the ideas of suggested systems such as; green taxation are not explained in detail. This draws out the need of

policy review and reforms in order to consider also the use of green taxation and other economic measure to control GHGs emission.

These policies need reforms as taxation is not a single sectoral issue; it is a system which needs inputs from different sectors. The policies also should be compatible to ensure a cross-sector approach for GHGs emission in the country. The policies should, from the very beginning, aim at achieving economic growth at the same time conserving the environment. Kerry, Pearce and Bateman called it Green Economy arguing that; "green economy must overtime, evolve in such a way as to decouple the growth in economic output (activity) from the environment impacts of that activity, however this involve technical changes to minimize damage to environment" (Turner, Pearce and Bateman, 1994: 30).

2.4 Constraints

Although the idea of green taxation seems to be reasonable, however there are number of setbacks which may halt its development and implementation. Generally three major distinguishing factors hindering implementation of environmental policy in developing countries which are; "the extent to which individuals' rights to resources and environmental assets are not well defined, institutional weakness, and intervention in the market-place with consequent government failure" (Turner, Pearce and Bateman, 1994: 316). To be specific, in Tanzania, together with the policy problem highlighted above, other setbacks includes; funding, technology, corruption, public unawareness, and poverty.

Funding

Fund is a major constraint in this move. Implementation of green taxation goes parallel with change of other systems such as; country's system of tax collection to embrace such kind of taxes, change of other policy, promotion of public awareness, and control and monitoring systems. Tanzania has not enough money for all mentioned changes. Monetary problem has also contributed to the failure of implementation of other pollution control mechanisms such as, tax relief and subsidies. Tax relief faces resistance on the grounds that, the country which is poor, will lose a substantial amount of money if the system is implemented.

Technology

Application of inventive approaches to measure things such as; level of GHGs, harmfulness, and other GHGs related measures is inevitable if the correct taxes are to be charged to emitters. This would help to avoid complains about the charges, and identification of different groups of gases according to their level of danger which will help to set standards of emission levels and so on. Technology would help the flow of information which is very important in GHGs control including setting up of taxes. "The accurate determination an appropriate pollution tax level is dependent upon accurate information regarding the damage costs of that pollution and the benefits its associated production of goods" (Turner, Pearce and Bateman, 1994: 179). Technology is not extensively applied in Tanzania. The country needs relevant technology if green taxation

scheme is to be effectively implemented and properly function for the well being of present and future generations.

Corruption

Corruption is one of the country's enemies which, from economic point of view, have contributed much to a least economic position of the country. Corruption is dominant in many areas including tax collection system. Appropriate implementation of green taxation needs also the fight in corruption. Also corruption has facilitated the authorization of operation of a number of production industries which are claimed to pollute the environment in the country.

Poverty

As pointed out, poverty is the threat to the environment. There is a widespread of poverty in the country which creates pressure on the environmental resource. Poverty contributes much on the global GHGs by unsustainable utilization of forest resource. Poverty has some impacts on green taxation if at all implemented in the country. Green taxation includes both domestic and commercial emitters. The large parts of domestic emitters are poor therefore if the charge will be imposed on them they will not be able to pay.

Public unawareness

Many people in Tanzania are not aware of the global GHGs emission or its control mechanisms such as green taxation. People are even not aware about the causes of the environmental pollution and what are its consequences. Introduction of the green taxation needs also raises people's awareness and understanding on the issues of GHGs emissions and their control mechanisms.

Large emitters in the country also need to be educated about the legal procedures, permissible emission, emission standards, taxes per unit of emission, and all issues of GHGs emissions; their prevention or reduction, control mechanisms, the undesirable consequences of GHGs and so on. In general public awareness is inevitable if green taxation is to be effectively implemented in Tanzania and elsewhere.

3.0 Conclusion

Anything, (in this case; policy, governance, strong institutions, and strong market) is cost effective (benefits) if increase the human wellbeing, and it is costly if it reduces the human wellbeing. (Turner, Pearce and Bateman, 1994: 93). Green taxation can be looked upon from different perspectives to adjudicate its feasibility in Tanzania. From economic standpoint, green taxation if implemented, seems to be more costly in Tanzania due to insufficient resources (technology, knowledge, and fund). The cost of setting up the necessary technical inputs is considerably higher for a poor country like Tanzania. If taxation is to function, then its implementation should be within the monetary capacity of the country. Currently, this is not the case for Tanzania.

From political perspectives, green taxes implementation is increasingly uncertain. Strong policy set up with regard to taxation is inevitable if the system is to achieve its emission

goals in the country. If the opposite is true then, it can be said that the system is not feasible instead it is costly.

Lastly, social implications of green taxation lie upon the willingness of the emitters such as; industries and individuals to stop polluting the environment. Also to co-ordinate with the government in a whole system of emission control including taxation. It is argued that when the point reach that all the key stakeholders turns green then the problem of global GHGs emission will be solved.

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