

SOUTH AFRICA

Options for promoting Environmental Fiscal Reform in EC Development Cooperation

Country case study South Africa

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February 2010

EXECUTIVE SUMMARY

During recent years the concept of an environmental fiscal reform became well-known in South Africa. New environmental initiatives promoting sustainable development were proposed under the heading of environmental fiscal reform in the Budget 2009/10. The efforts undertaken by the National Treasury were relevant in identifying the role market-based instrument could play in supporting sustainable development in South Africa. The initial step for this development was a study commissioned by the National Treasury with the aim of providing a framework for orientation and of identifying criteria for the development and evaluation of environmental tax policy proposals thereby laying the foundation for the establishment of a coherent fiscal policy framework. In 2006, the National Treasury published the 'Draft Policy Paper: A Framework For Considering Market-Based Instruments To Support Environmental Fiscal Reform In South Africa' reflecting its views. The intention of this policy paper is to facilitate open and frank discussions on the subjects of environmental fiscal reform.

A whole range of EFR instruments are currently in use in South Africa and options for revising them by considering the three pillars of sustainable developments as well as for the introducing new ones are included in the draft policy paper and other studies commissioned by the Government of South Africa. Moreover, proposals for EFR policies are analysed qualitatively as well as quantitatively by different stakeholders including universities, consultancies and international organisations, such as the World Bank. The underlying concept of EFR – that the revenue and the expenditure side is studied in detail - is accommodated revealing that the multiple benefits of an EFR, i.e. environmental, fiscal/economical and poverty reduction, can be achieved simultaneously if the EFR is designed explicitly addressing the country specific conditions.

This review of the experiences of South Africa towards EFR clarifies the importance of developing a consistent fiscal policy framework in the context of achieving the objectives of sustainable development. Based on these findings it can be argued that one of the main criteria for the successful implementation of EFR is to have the full support from the National Treasury.

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1. INTRODUCTION

This paper is part of the study 'Options for promoting Environmental Fiscal Reform in EC Development Cooperation' commissioned by the European Commission providing an overview of environmental fiscal reform (EFR) activities implemented and currently discussed at the political level in South Africa.

The overall purpose of the project is to provide an overview of African Caribbean Pacific (ACP) developing countries undertaking EFR-actions and to establish criteria for identifying a good potential for successful EFR support by the European Commission in development cooperation. To achieve these tasks five country cases² studies are being undertaken discussing the current situation and assessing whether EFR activities are under way.

The paper starts with some background information on South Africa thereby focusing on fiscal policy and environmental policy issues (Section 2). The EFR instruments implemented in South Africa are studied in Section 3 and studies analysing these instruments and the EFR concept are reviewed in the Section 4³. The following section is to consider EFR proposals made in South Africa recently (Section 5). The report concludes with a discussion of the findings surrounding the concept of EFR in South Africa and drawing conclusions of issues which are relevant in the political discussion and the implementation of EFR activities in the political reality (Section 6).

The EFR concept became generally known in South Africa with the publication of the 'Draft Policy Paper A Framework For Considering Market-Based Instruments To Support Environmental Fiscal Reform In South Africa' by the National Treasury in 2006 (National Treasury, 2006). This report is by and large in the framework of the EFR concept stressed in the OECD and World Bank reports referring to a range of taxation and pricing measures which can raise fiscal revenues while furthering environmental goals (OECD, 2005 and World Bank, 2005).

2. BACKGROUND INFORMATION ON SOUTH AFRICA

South Africa is an upper-middle income economy with an income per capita of 5,820 USD per capita (€3,957 per capita) which is much higher than the average of other Sub-Saharan Africa countries (1,082 USD per capita (€736 per capita)). It belongs to BRICS countries (Brasilia, Russia, India, China and South Africa) with a higher gross national income (GNI) per capita than Brazil, China and India.

The population of South Africa is about 49 million inhabitants. 61 percent of the population is living in urban areas and the rate of urbanization is estimated to be 1.4 percent for the period 2005-2010 (CIA, The World Factbook). The fertility rate is 2.38 born children per woman and the most recent figures show a population growth rate of 0.281 percent.

Although South Africa is classified as a developing country, its economy resembles that of a developed economy in many respects. The share of agriculture is low amounting to about 3 percent of GDP; industry has an overall share of 31 percent and the service sector of 66 percent. South Africa is described as an emerging market with an abundant supply of natural resources which is reflected in the industry decomposition as the mining industry contributes strongly to GDP. The unemployment rate in South Africa is estimated to be around 24 percent of the total labour force and about 9 percent of the labour force is employed in agriculture, 26 percent in industry and the 65 percent in the service sector.

South Africa is regularly been described as a dual economy country with a great inequality in incomes and wealth. Standards of living, both in economic and social terms, vary according to skin colour and between

² The five countries are: Barbados, Burkina Faso, South Africa, Uganda and Vanuatu. Missions to Burkina Faso and Uganda have been undertaken with the aim of compiling relevant information and data as well as interviewing different stakeholders. The country reports for Barbados, South Africa and Vanuatu are carried out as desk studies.

³ A caveat has to be made as this report cannot provide a comprehensive description of the current situation with regard to the concept of EFR or an exhaustive review of EFR instruments in South Africa due to time and budget constraints.

urban and rural communities. The first economy, with its large, capital intensive firms built up under apartheid, has been best placed to take advantage of trade liberalisation and macroeconomic stability. Smaller firms and those in the informal economy have done less well. Many black, Asian and coloured South Africans live a precarious existence in this second economy moving between unemployment, work in the informal sector (often as “hawkers”) and poorly paid jobs in the formal sector (EC, 2006). In 2000, it was estimated that 50 percent of the population is living below the poverty line. This situation is still prevailing as revealed by the Gini index which measures the degree of inequality in the distribution of family income⁴. The Gini index for South Africa is estimated to be 65 in 2005 as compared to 59.3 in 1994 (CIA, the World Fact book). The increase in the index shows that the society – as expressed in the distribution of income – has become more unequal during recent years⁵.

South Africa experienced economic growth since the end of the apartheid regime with high growth rate achieving macro-economic stability. The global financial crisis also affected South Africa and did not pass by traceless as GDP fell by about 2 percent in 2009. During recent years the governments were successful in institutionalising democracy and achieved (EC, 2006):

- a multi-party political system
- a functioning parliamentary democracy
- a respected constitution and entrenched rule of law
- an independent judiciary
- mechanisms for accountability, transparency and information in public administration

The main focus of the policies implemented by South African governments is on tackling economic growth, unemployment and poverty and this is reflected in the Accelerated and Shared Growth Initiative (ASGISA) which was adopted by the government in 2005. ASGISA is not a new economic policy but rather a set of policies and interventions aiming to speed up growth and to complement or strengthen other policy programmes.

2.1 Fiscal and tax policy

South Africa’s prudent fiscal policy combined with sound macroeconomic policies which are supported by a consistent and transparent policy framework resulted in an expansion of public finances as shown in Table 1. Total revenues increased to 27.1 percent of GDP in the fiscal year 2007/08 from 22.7 percent in 2000/01. In contrast total expenditure remained almost stable during the last decade leading to a small budget surplus. The worsening economic conditions caused by the global financial crisis are expected to lead to fiscal deficits in the coming years. The South African public debt is at a rather moderate level but the latest estimates are showing an increase from 31.6 percent of GDP in 2008 to 35.7 in 2009.

The changed economic and fiscal framework conditions did not lead to the revision of the overall policies as the budget law in February 2009 confirmed the priorities for macroeconomic policy set in 2004 and renewed in the October 2008 Medium Term Budget Policy Statement (MTBPS), which are to boost economic growth and employment while increasing funding for poverty reduction (AfDB and OECD, 2009).

⁴ According to the United Nations Development Programme, 43 percent of the population still live on less than USD 2 per day (UNDP, 2008).

⁵ South Africa has the second highest Gini index (the highest index is reported for Namibia) meaning that the distribution of income is not as unequal in other sub-Saharan countries – see <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2172rank.html?countryName=South%20Africa&countryCode=sf®ionCode=af&rank=2#sf> (accessed February 2, 2010).

Table 1: Macro-economic figures of South Africa

	Total budget revenue	Total budget revenue as % of GDP	Total budget expenditure	Total budget expenditure as % of GDP	GDP (nominal)	budget deficit/surplus as % of GDP
	billion R	%	billion R	%	billion R	%
1998/99	184	24.3	201	26.6	757	-2.3
1999/00	198	23.7	215	25.6	837	-2.0
2000/01	216	22.7	234	24.6	952	-1.9
2001/02	248	23.7	263	25.1	1,049	-1.4
2002/03	279	23.2	292	24.3	1,198	-1.1
2003/04	299	23.2	329	25.5	1,289	-2.3
2004/05	348	24.4	369	25.8	1,427	-1.4
2005/06	412	26.0	417	26.3	1,585	-0.3
2006/07	481	26.6	470	26.0	1,808	0.6
2007/08	560	27.1	541	26.2	2,062	0.9
2008/09 (preliminary)	608	26.2	636	27.4	2,320	-1.0
2009/10 (projection)	599	24.4	739	30.1	2,456	-5.7
2010/11 (projection)	673	24.6	799	29.2	2,736	-4.6
2011/12 (projection)	751	24.7	861	28.3	3,041	-3.6

Source: National Treasury and SARS, 2008 and IMF, 2009

Table 2 shows the development of the revenues of the main taxes and levies revealing that the largest percentage increase was in the case of company taxation. Increases of other revenue sources as well as total tax revenues and GDP were rather similar with the exception of the fuel levy⁶.

Table 2: Tax revenue by main revenue source, 1994/95 – 2007/08 (billion R; in current prices)

	Personal income tax (PIT)	Corporate income tax (CIT)	Value Added Tax (VAT)	Fuel levy	Customs	Other	Total tax revenue	GDP
1994/95	45.0	13.3	29.3	8.4	5.6	12.3	113.8	497.2
1995/96	51.2	15.3	32.8	8.9	6.2	12.9	127.3	564.2
1996/97	59.5	18.3	35.9	10.4	7.2	16.0	147.3	635.2
1997/98	68.3	21.1	40.1	12.1	5.6	18.0	165.3	699.8
1998/99	77.7	22.3	44.0	13.6	6.1	21.1	184.8	757.1
1999/00	85.9	24.1	48.4	14.3	6.8	21.9	201.4	837.2
2000/01	86.5	33.5	54.5	14.5	8.2	23.2	220.3	951.7
2001/02	90.4	49.5	61.1	14.9	8.7	27.7	252.3	1,048.8
2002/03	94.3	62.1	70.2	15.3	9.6	30.7	282.2	1,198.5
2003/04	98.5	67.0	80.7	16.7	8.4	31.3	302.5	1,289.0
2004/05	111.0	78.3	98.2	19.2	13.3	35.1	355.0	1,427.4
2005/06	125.6	98.4	114.4	20.5	18.2	40.2	417.3	1,584.7
2006/07	140.6	134.3	134.5	21.8	24.0	40.3	495.5	1,808.3
2007/08	168.8	160.7	150.4	23.7	27.1	42.1	572.9	2,061.9

⁶ See Section III.1 for a detailed discussion concerning the fuel levy.

accumulated 2007/08 - 1994/95	275%	1112%	414%	184%	383%	243%	404%	315%
per year	11%	21%	13%	8%	13%	10%	13%	12%

Note: column corporate income tax also includes the secondary tax on companies

Total tax revenues of Table 2 are lower than the total budget revenues of Table 1 as non-tax revenues and South Africa Customs Union (SACU) payments are subtracted.

Source: *National Treasury and SARS, 2008*

The significance of company taxation as a revenue source is evident as its share increased from 11 percent of total tax revenue in 1994/95 to 24 percent in 2007/08. This development is rather different from the situation in EU member states where the overall share of corporate income taxes is in general lower (the EU average is about 7.5 percent of total tax revenues) and has only moderately increased during the last 10 years. A recent report published by the IMF reveals that the share of corporate tax revenue – expressed in percent of GDP - was highest in OECD countries amounting to about 3.5 percent in 2003 and about 2.4 percent in sub-Saharan Africa, i.e. much lower than the 5.2 percent figure in South Africa for the fiscal year 2003/04 (Norregaard and Khan, 2007).

South Africa counts heavily on consumption taxes, in particular value added tax (VAT), in the overall tax structure as shown in Table 2 and 3. The share of VAT is in the same range as it is the case in EU member states and in general higher than in other developing countries. However, the overall share of total tax revenue to GDP is smaller in South Africa than in many developed countries, in particular EU member states where this share can be up to 48 percent as for example in Sweden and Denmark (Eurostat, 2009)⁷.

Another big difference between South Africa and other sub-Saharan countries is the fact that international trade taxes are almost negligible. Countries such as Uganda are crucially relying on the revenues of international trade taxes as they generate up to 50 percent of total tax revenues (Ayoki, 2007).

Table 3: Tax revenue by main revenue source in percent of total tax revenues, 1994/95 – 2007/08 (the share as expressed in percentage of GDP is presented in brackets)

	Personal income tax (PIT)	Corporate income tax (CIT)	Value Added Tax (VAT)	Fuel levy	Customs	Other	Total
1994/95	40 (9.0)	12 (2.7)	26 (5.9)	7 (1.7)	5 (1.1)	12 (2.5)	100 (22.9)
1995/96	40 (9.1)	12 (2.7)	26 (5.8)	7 (1.6)	5 (1.1)	11 (2.3)	100 (22.6)
1996/97	40 (9.4)	12 (2.9)	24 (5.7)	7 (1.6)	5 (1.1)	12 (2.5)	100 (23.2)
1997/98	41 (9.8)	13 (3.0)	24 (5.7)	7 (1.7)	3 (0.8)	12 (2.6)	100 (23.6)
1998/99	42 (10.4)	12 (2.9)	24 (5.8)	7 (1.8)	3 (0.8)	12 (2.8)	100 (24.4)
1999/00	43 (10.3)	12 (2.9)	24 (5.8)	7 (1.7)	3 (0.8)	12 (2.6)	100 (24.1)
2000/01	39 (9.1)	15 (3.5)	25 (5.7)	7 (1.5)	4 (0.9)	12 (2.4)	100 (23.2)
2001/02	36 (8.6)	20 (4.7)	24 (5.8)	6 (1.4)	3 (0.8)	14 (2.6)	100 (24.1)
2002/03	33 (7.9)	22 (5.2)	25 (5.9)	5 (1.3)	3 (0.8)	13 (2.6)	100 (23.5)
2003/04	33 (7.6)	22 (5.2)	27 (6.3)	6 (1.3)	3 (0.7)	12 (2.4)	100 (23.5)
2004/05	31 (7.8)	22 (5.5)	28 (6.9)	5 (1.3)	4 (0.9)	12 (2.5)	100 (24.9)
2005/06	30 (7.9)	24 (6.2)	27 (7.2)	5 (1.3)	4 (1.1)	13 (2.5)	100 (26.3)
2006/07	28 (7.8)	27 (7.4)	27 (7.4)	4 (1.2)	5 (1.3)	11 (2.2)	100 (27.4)
2007/08	29 (8.2)	28 (7.8)	26 (7.3)	4 (1.2)	5 (1.3)	11 (2.0)	100 (27.8)

Source: *author's own calculation based on National Treasury and SARS, 2008*

⁷ The EU average of the ratio total tax revenue-to-GDP was 39.8 percent in 2007 ranging between 29.4 percent in Romania and 48.7 percent in Denmark (Eurostat, 2009).

The fiscal system of South Africa is in line with the general trend of the growing importance of consumption-based taxes. However, this trend, in particular in the context of developing countries, is often described as a consequence of the decline in international trade taxes / customs duties due to the globalisation process and the dismantling of trade barriers. But trade taxes haven't played an important role in South Africa as shown in Table 3. It is interesting to note that the reliance on corporate taxation increased during recent which is surprising because of the trend of taxing mobile tax bases, such as consumption (Norregaard and Khan, 2007). The data also show that the importance of the fuel levy, i.e. the main tax in the environmental field, has declined in terms of its contribution to the national budget.

The South African fiscal regime does not actually correspond to the one which is normally expected from a developing country. But this is of no surprise because South Africa is an industrialised and a developing country.

2.2 Environmental policy

South Africa is facing severe environmental challenges. The latest 'South Africa Environment Outlook A report on the state of the environment' (DEAT, 2006, p. 2) provides an exhaustive overview of the current environment situation:

South Africa has made significant progress in the area of environmental management in the past decade. Despite this, there have been increasing pressures on our resource base and some aspects of the environment have deteriorated. Many challenges still lie in South Africa's path to sustainable development, some of them needing urgent and dedicated attention. We need to act decisively now, to safeguard society and the economy through sound environmental management.

We have made progress since 1999. Laws and strategies have been developed that focus on key environmental areas, such as biodiversity, air quality, protected areas, urban and rural development, waste, and disaster management. Efforts to implement and enforce the policy framework have intensified.

In general, the condition of the South African environment is deteriorating. Increasing pollution and declining air quality are harming people's health. Natural resources are being exploited in an unsustainable way, threatening the functioning of ecosystems. Water quality and the health of aquatic ecosystems are declining. Land degradation remains a serious problem.

As a result of the process of undertaken an assessment of the environmental situation in South Africa the state of environment report identifies four major environmental priorities requiring urgent interventions. These priorities are as follows (DEAT, 2006):

- Water – availability and quality;
- Climate change;
- Human vulnerability; and
- Loss of biodiversity and ecosystem functioning.

The daunting environmental challenges are reflecting the two sides of South Africa namely as an industrialised and a developing country. The probably clearest example of this aspect can be found in the context of the climate change debate as South Africa was ranked

- 18 (out of 140 countries) on total CO₂;
- 42 on CO₂ emission per capita; and
- 118 in terms of GDP per CO₂ emission in 2007 (IEA, 2009).

These figures are showing that South Africa is a relatively large producer of carbon dioxide emissions mainly resulting from comparatively cheap electricity generation. Electricity production heavily relies on coal (an

indigenous product) as more than 90 percent of electricity is generated by using coal. The overall energy and carbon intensity of the South African economy is one of the highest in the world and policies are currently underway with the aim of improving energy efficiency and to promote renewable energy sources.

Water availability is seen as significant for the economic development and human well-being health in South Africa. Conservative handling with the resource water is therefore even more relevant in South Africa, a semi-arid country. Although some progress in the development of the policy and legal framework happened during the last years, South Africa has less water available and of poorer quality as before (DEAT, 2006). It is reported that under the assumption of a further growing demand, South Africa faces a serious risk of water shortages in the not so distant future, i.e. by 2025 at the latest. One of driving forces for the growth in water consumption is the increased irrigation as agriculture consumes 50 percent of the country's water reserves and contributes about 3 percent to GDP.

Although waste is not explicitly referred to as one of most urgent environmental priorities, it is becoming another policy field requiring new policies for dealing with the '*significant challenges in expanding, sustaining and improving solid waste management practices and services. These challenges strongly complement national policy priorities of supporting economic growth and recuing poverty, and indeed are critical prerequisites fir the achievement of these priorities* (Savage, 2006, p.1)'. Currently the Department of Environmental Affairs are undertaken steps to prepare a National Waste Management Strategy for South Africa.

Although some progress in environmental policy is reported⁸, the focus of the paper and project respectively lies in the analysis of EFR activities either already implemented or being discussed at the political level in South Africa. Therefore we are coming back to the 2006 State of the environment report (DEAT, 2006) as it states that

South Africa's environmental policies are currently dominated by regulatory instruments such as standards, bans on the use of certain goods or technologies, liability payments (such as the mining rehabilitation fund), and non-tradable permit system. ...

While there are several existing environmentally-related taxes, such as the general fuel levy, plastic bag levies, and electricity- and water-use levies, most of these are intended to raise revenue to cover administration and implementation costs rather than to improve the environment.

Economic markets can provide an efficient means of allocating scarce resources, such as water, but they often fail, particularly in the appropriate allocation of environmental goods and resources, which results in insufficient consideration of environmental issues in everyday market activities. This is the case in South Africa, a fact that is recognized by the National Treasury, which has begun a policy dialogue on the role of market-based instruments, such as taxes and charges, in environmental fiscal reform. By implementing such taxes and charges to influence the way in which markets operate, it is possible to encourage more efficient resource use.

The following section discusses these findings regarding the use of market-based instruments⁹ in more detail as the main rationale of this project is to focus on environmental fiscal reform (EFR) activities in South Africa and what lessons can be drawn from the experiences gained.

3. EXPERIENCES WITH MBIs / EFRs

The application of environmental taxes is well documented in South Africa and collated in a 'Draft Policy Paper A Framework For Considering Market-Based Instruments To Support Environmental Fiscal Reform In

⁸ A thorough analysis of the environmental policy in South Africa is not part of this project. Detailed information on the environment and a discussion of the South Africa environmental policies can be found in DEAT, 2006 and EC, 2006.

⁹ The terms market-based instruments (MBIs), economic instruments (EIs) and EFR instruments are being used interchangeable in the report.

South Africa' which was published by the National Treasury in 2006 (National Treasury, 2006 – see also GTZ, 2004 and Morden and Hemraj, 2007). Some findings of this report are going back to the results of a research project (National Treasury, 2003) which was commissioned by the Tax Policy Directorate of the National Treasury and funded by the UK Department for International Development.

The draft policy paper provides a '*comprehensive overview of the current and possible future use of MBIs in South Africa and recognizes that although various examples do currently exist, the primary rationale underlying their introduction has been income generation (Paterson, 2007)*'. Furthermore, the paper discusses the concept of environmental taxes in detail based on international practice as stressed by international organisation, such as OECD and Eurostat.

The main feature to draw attention to is the fact that there is no uniform definition of the term environmental tax. However there is a widely accepted agreement that an environmental tax - sometimes also called environmentally-related tax (OECD, 2001) - is classified as a '*tax whose tax base is a physical unit (or proxy of it) that has a proven specific negative impact on the environment (Eurostat, 2001)*'. This characterization of an environmental tax is crucial as the intent of the tax is of no relevance. An environmental tax is therefore determined based on the tax base and not on the purpose and intent why it is introduced, i.e. whether the primary aim of the tax is to raise revenue or to change the behaviour of economic actors¹⁰.

A further definition which is applied widely is the differentiation between a 'tax' as a compulsory unrequited payment and a 'charge' which is classified as a required payment for a service rendered. It is furthermore essential to mention that a levy is also a compulsory payment and can therefore be put on the same level as a tax.

It must be clearly stated that the draft policy paper of the National Treasury is a very useful document as it '*reflects the preliminary views of the National Treasury and not necessarily those of Government. It should be noted that the document is being released in order to facilitate open and frank discussions on the subject of environmental fiscal reform. This will assist Government to formulate well-considered tax proposals, which will be informed by the needs of the country and international trends (National Treasury, 2006)*'.

The draft policy paper is directed to study reforms on the revenue side by focusing on the environment taxes and charges. Other market-based instruments are not considered in detail. A further interesting aspect to be mentioned is that the term environmental fiscal reform is used in the report to analyse the interface between fiscal and environmental policy. The notion of environmental fiscal reform as promoted by the OECD (OECD, 2005) and World Bank (World Bank, 2005) is slightly broader and goes beyond the South African approach as these reports are stating that EFR - apart fiscal and environmental policy objectives – can also contribute to poverty reduction (OECD, 2005):

EFR can contribute to poverty reduction directly by helping address environmental problems that threaten the health and livelihoods of the poor such as water contamination and air pollution. EFR can also help generate resources, notably to help achieve Millennium Development Goals (MDGs) and for other pro-poor programmes.

It is beyond this project to analyse why the aspect of poverty reduction in the context of EFR is not assessed in more detail as poverty reduction is one of the main policy objectives of the South Africa Government (see Section II).

Table 4 presents an overview of environmental taxes and charges currently implemented in South Africa updating the information presented in the draft policy paper (National Treasury, 2006). Some of the EFR instruments listed in this table are studied in the following sections in more detail.

¹⁰ A more detailed discussion can be found in the final report of this project (Section 2 above) as well as in reports published by the OECD and the EEA: OECD, 2001 and EEA, 2005.

Table 4: Overview of environmental taxes and charge in South Africa

Sector	Tax/levy (charge)	Tax Base	Tax Rate	Further information
Transport Fuels	General fuel levy	Petrol ,Diesel, Kerosene, Biodiesel	1.50 R/litre (petrol l) 1.35 R/litre (diesel and kerosene unmarked) Biodiesel: 0.675 R/litre or 1.35 R/litre	
	Road accident fund levy	Petrol, Diesel, Biodiesel	0.64 R/litre	Revenues are earmarked and not part of the national budget
	Equalisation fund levy	Petrol, Diesel, Biodiesel	Currently set at zero	
	Customs and excise levy	Petrol, Diesel, Kerosene	0.03909 R/litre (petrol) 0.03817 R/litre (diesel)	
Vehicle taxation	<i>Ad valorem</i> excise and customs duty (one-off vehicle taxes)	All passenger and light commercial vehicles, motorcycles	Graduated rate based on the vehicle price with an upper ceiling of 20 per cent (i.e. the duties are based solely on price) Medium and heavy commercial vehicles are exempt from this duty and are only subject to VAT (all other vehicles are also subject to VAT)	New scheme to be implemented in March 2010
	Road licensing fees (recurrent vehicle taxes)	All registered vehicles	Fees vary between different provinces – usually based on weight	Revenues are part of the budget of provinces
Aviation	Aviation Fuel Levy	Aviation fuel sales (wholesale)	1.5 Rcent per litre on all fuel sales excluding foreign operators	
	Airport charges	Landing, parking, and passenger service charge		Charges imposed to fund the operation of the South Africa Civil Aviation Authority (SACAA)
	Air Passenger Departure Tax	International air travel from South Africa	R120 per passenger; R60 per passenger to Southern African Customs Union member states	An increase in the rates to R 150 and R 80 respectively from October 2009 was proposed in the budget 2009/10
Waste	Plastic shopping bags levy	All plastic shopping bags	4 cents per bag	The tax rate was increased in the budget 2009/10
	Taxation of incandescent light bulbs	Incandescent light bulb	Tax rate is proposed to be between 0.01 and 0.03 R per watt) – the total tax to be about R3 per bulb	New tax in the budget 2009/10
Energy	Electricity tariff	All electricity consumed		In April 2001, South Africa introduced free basic electricity for poor households (see III.2).
	NER Electricity Levy	All electricity generated		A levy per kWh is implemented on all

				electricity generated to fund the National Electricity Regulator
	Local Government Electricity Surplus	Electricity distributed to end-users by municipalities		Implicit tax rates vary between different municipalities. Total surplus revenue raised is approximately R 1.4 billion
	Electricity levy		R 0,02 per kWh levied on the sale of electricity generated from non-renewable sources	New tax implemented in 2009 (see Section III.2)
Water supply	User charge		User charges are set at municipal level and an increasing block tariff often applies	Free basic water delivery of 6,000 l per poor household per month
	Water Resource Management Charge	All registered water use from DWAF water schemes	Charge rates vary according to different users. The aim is to recover costs associated with water supply and abstraction	
	Water resource development and use of water works charge	All registered water use from DWAF water schemes	Charge rates vary according to different users. The charges aim to recover the costs associated with the construction, operation and maintenance of water schemes	
	Water Research Fund Levy	All registered water users	This levy is earmarked to fund the operations of the Water Research Commission	
Waste water / water sanitation	Waste Water Discharge Charge System (WDCS proposed)	All (DWAF) registered water dischargers	The WDCS is in the process of being developed. 2 components are proposed for the system. A cost recovery based charge and a levy/ tax on waste effluent	

Source: author's compilation based on National Treasury, 2006, Morden and Hemraj, 2007, and other publications of the Government of South Africa

Revenues generated from environmental taxes cannot be used to make any judgement whether the fiscal regime of a country is environmentally-friendly. But it is international practice to use these figures as an indicator showing the revenues development over time in relation to total tax revenue and GDP. Table 5 presents the revenue figures of the main environmental taxes for the period between 2001/02 and 2007/08. These data are providing some interesting insights:

- Revenues of all environmental taxes increased during the period. The biggest percentage increases in revenues can be reported from the road accident fund levy.
- The share of environmental tax revenue to total tax revenue and to GDP dropped over the period which is due to the fact that the growth rates (in nominal terms) in both total tax revenues (127 percent) and GDP (97 percent) were higher than the growth rates of environmental taxes during this period.

- Although there is no existing benchmark for the analysis of the ratios of environmental taxes revenues to total tax revenues and GDP respectively, it can provide some insights. These ratios are often used for international comparison and the South African results are comparable to the ratios in EU member states (for example, the EU 27 average ratio environmental taxes to total taxes (GDP) was 6.2 percent (2.5 percent) in 2007) but lower than in Uganda¹¹.
- Larger increase in the revenues of environmental taxes can be expected due to the tax proposals of the Budget 2009/10 as fuel levies and the road accident levy (see Table 7) are being increased and the electricity tax introduced. The budgetary implications of the tax proposals are presented in Table 6.

Table 5: Environmental tax revenue, 2001/02 - 2007/08 (in million R – nominal figures)

	General fuel levy	Road accident levy	Air dep. tax	Motor vehicle licences (prov'al tax)	total environmental taxes	in % of total tax revenue	in % of GDP
	million R	million R	million R	million R	million R	In %	In %
2001/02	14,923	2,821	296	1,871	19,911	7.9	1.9
2002/03	15,334	3,264	325	2,121	21,044	7.5	1.8
2003/04	16,652	3,599	367	2,538	23,156	7.7	1.8
2004/05	19,190	4,623	412	2,695	26,920	7.6	1.9
2005/06	20,507	8,763	458	3,305	33,033	7.9	2.1
2006/07	21,845	7,213	485	3,616	33,159	6.7	1.8
2007/08	23,741	8,104	541	3,988	36,374	6.3	1.8
Accumulated 2007/08 - 2001/02	59%	187%	83%	113%	83%		
per year	8%	19%	11%	13%	11%		

Note: the table does not include excise and customs on fuels as well as *ad valorem* excise and customs duties on vehicles, motorcycles (SARS, 2009) meaning that the total revenues from environmental taxes are underestimated.

Source: different publications from the National Treasury

A clear indication that the term environmental fiscal reform is strongly braced in the South African politics is the Budget 2009/10 report published by the South Africa Revenue Services (SARS, 2009) as different tax proposals are discussed under this term. An overview of different EFR instruments proposed in the Budget 2009/10 highlighting both the revenue side, i.e. environmental tax proposals, and the expenditure side, is as follows¹²:

- Introducing incentives for cleaner production (energy efficiency).
- Increasing the levy on plastic bags.
- Introducing taxation of incandescent light bulbs.
- Proposing a tax incentive for carbon credits from Clean Development Mechanism.
- Increasing motor vehicle *ad valorem* excise duties.
- Increasing international air passenger departure tax.

¹¹ See the country case study Uganda; the share of environmental taxes to GDP is rather difficult to compare internationally as it is partly determined by the share of total taxes to GDP. This ratio differs widely between countries (see the discussion and Table 3 above).

¹² This information was compiled by Warburton Attorneys (www.warburtons.co.za). It can be questioned whether all these policies can be classified as part of an environmental fiscal reform. But this would be undoubtedly arduous and will not be followed up in this report. However, this list is insofar significant as it reveals a rather long list of policies proposed by the Government of South Africa addressing environmental concerns. See also Morden, 200

- Increasing fuel levies.
- Providing R 45 million to Working for Energy, a programme which uses biomass to generate electricity.
- Providing R 30 million to support research on climate change mitigation and adaptation strategies to inform the development of a national climate change strategy.
- Implementing, as from 1 July 2009, the electricity levy announced in the 2008 Budget. The levy, which is intended as the first step towards the introduction of a more comprehensive greenhouse gas emissions-based carbon tax, is a tax of R 0.02 per kWh levied on the sale of electricity generated from non-renewable sources, to be collected at sources by the producers / generators of electricity. The electricity levy acts as a disincentive to fossil-fuel-based power generation.
- Providing R 1 billion to the Department of Water Affairs and Forestry for the installation and rehabilitation of 71 regional bulk water and sanitation schemes.

The SARS report also includes a summary table presenting the budgetary implications of the tax proposals of the Budget 2009/10. The presentation of the tax proposals is insofar of great interest as it points out the implications of the individual tax proposals and also discloses the overall budgetary implications of the tax proposals. This presentation of the tax proposals reminds on environmental tax reforms (ETRs) implemented in different EU member states, such as Denmark, Sweden, Germany and the UK¹³. The loss in revenues due to reduction in direct taxes, i.e. personal income taxes and company taxes, is partly compensated by an increase in the revenues generated from indirect taxes, i.e. consumption taxes and environmental taxes, as either new ones are introduced or existing ones are increased. The estimated net effect of this tax switch policy is a reduction of the overall tax burden of the economy by 4,575 million R.

Table 6: Summary of the effects of the Budget 2009/2010 tax proposals (million R)

	Effects of tax proposals	
	Individual	Net / overall
Personal income tax	-13,550	
▪ Adjust personal income tax rate structure	-13,000	
▪ Adjustment in monetary thresholds (medical scheme contributions and savings)	-550	
Business taxes	-1,000	
▪ Industrial policy	-1,000	
Indirect taxes	9,975	
▪ Increase in general fuel levy	4,890	
▪ Electricity tax	2,780	
▪ Incandescent light bulb levy	20	
▪ Air passenger departure tax	120	
▪ Plastic bag levy	15	
▪ Diamond export levy	50	
▪ Increase in excise duties on tobacco products and alcoholic beverages	2,100	
Budget 2009/10 proposal		- 4,575

Source: SARS, 2009

3.1 Energy sector

International experience shows that taxes levied on energy products are in terms of their revenue generating potential the most important one as these taxes are generating up to 60-70 percent of total environmental tax

¹³ The link between the terms 'environmental tax reform (ETR)' and 'environmental fiscal reform (EFR)' can be found in the very beginning in section "Definitions of key terms used throughout the report" in the final report of this project. Please see for further information on ETRs: Andersen and Ekins, 2009 and Ekins and Speck, forthcoming.

revenues (OECD, 2001 and Eurostat, 2009). This is also the case in South Africa. However, this result is not correct as the revenues from the road accident levy are earmarked for the road accident fund which is a state insurer providing insurance cover to all road users for incidents arising from the use of motor vehicles within the borders of South Africa.

Table 7 shows the development of the taxes levied on petrol and diesel. The total tax burden on petrol (diesel) increased on average by about 7 (9) percent in nominal terms between 2000 and 2009. Considering the inflation South Africa faced during the last 10 years period the real increase in the tax rates is much smaller. It is further worthwhile to mention that the road accident levy had a larger percentage increase than the general fuel levy.

Table 7: Development of environmental taxes levied on petrol (R per 1,000 litres)

	Petrol				Diesel			
	General fuel levy	Road accident levy	Other	Total	General fuel levy	Road accident levy	Other	Total
1990	31.9	4.2	11	47.1	31.4	2.1	11	44.5
1995	62.9	9.2	13.4	85.5	53.4	6	12	71.4
1998	86.6	14.5	12	113.1	76.1	10.3	12	98.4
1999	90.6	14.5	12	117.1	76.1	10.3	12	98.4
2000	95.6	14.5	4	114.1	79.1	10.3	4	93.4
2001	98	16.5	4	118.5	81	16.5	4	101.5
2002	98	18.5	4	120.5	81	18.5	4	103.5
2003	101	21.5	4	126.5	85	21.5	4	110.5
2004	111	26.5	4	141.5	95	26.5	4	125.5
2005	116	31.5	4	151.5	100	31.5	4	135.5
2006	116	36.5	4	156.5	100	36.5	4	140.5
2007	121	41.5	4	166.5	105	41.5	4	150.5
2008	127	46.5	4	177.5	111	46.5	4	161.5
2009	150	64	4	218 (0.19 € per litre)	135	64	4	203 (0.18 € per litre)
accumulated 2009 - 2000	157%	441%		191%	171%	621%		217%
per year	5%	18%		7%	6%	23%		9%

Note: Other includes equalisation fund levy and customs and excise levy; it does not contain the demand side management levy which is levied on unleaded petrol octane 95¹⁴.

Source: Department of Minerals and Energy http://www.dme.gov.za/energy/liquid_petrol.stm¹⁵

The end-user prices for petrol and diesel in South Africa are at the lower end compared to the prices in other Sub-Saharan countries¹⁶. The South African tax rates levied on transport fuels are also lower than in countries, such as Tanzania and Uganda¹⁷, which have a lower GDP per capita than South Africa.

¹⁴ See for a detailed discussion of all taxes levied on transport fuels: http://www.dme.gov.za/energy/liquid_petrol.stm

¹⁵ Further information on the different taxes levied on transport fuels can be found at the website of the South African Revenue Statistics (SARS): www.sars.gov.za

¹⁶ See for a worldwide overview of petrol and diesel prices: <http://www.gtz.de/de/dokumente/en-international-fuel-prices-data-preview-2009.pdf>

¹⁷ See the country case study: Uganda

The last point worthwhile to be mentioned related to EFR instruments in the energy sector is the intention of the Government of South Africa to equalise the general fuel levy on diesel and petrol over time (SARS, 2009). Petrol taxes are in general higher than diesel taxes worldwide – but with some exceptions, such as the UK. This policy contradicts environmental considerations as diesel is more environmental unfriendly than petrol because of higher carbon dioxide emissions and particles emissions.

3.2 Electricity pricing

The electricity sector is dominated by Eskom, a state owned company, which generates approximately 95 percent of electricity consumed in South Africa mainly in coal-powered plants. During recent year South Africa began to experience an electricity crisis leading to a significant downward revision to the economic growth forecasts. South Africa respectively Eskom are pursuing an ambitious programme of increasing the current nominal capacity of about 44,000 MW by a further 40,000 MW until 2025. Coal is expected to remain the major energy source but with a share of below 70 percent as compared to the current 90 percent. The Government of South Africa funds the electrification by providing capital grants through the integrated national electrification programme to Eskom and municipalities.

Apart from the EFR instruments shown in Table 4 other policies relevant for assessing the potential of EFR reform are in place.

- Electricity tariffs in South Africa are among the cheapest in the world (Eskom, 2009 and OECD/IEA, 2009) although the tariffs have been increased quite dramatically during the last two years: the average tariff increase have been 27.5 percent on April 1, 2008 followed by an average tariff increase of 31.3 percent from July 1, 2009. The standard tariff increased from 25.24 Rct/kWh¹⁸, i.e. 0.028 Euro/kWh.
- The Government of South Africa pursues the policy aim of providing free basic municipal service to poor households. The free services to be provided without any charge in the long run include electricity, water, sanitation and waste disposal¹⁹.
- Free basic electricity of 50 kWh per households and per months is provided. This amount is enough for basic functions, such as lighting, water heating using a kettle, ironing and access to a small black and white TV and radio. About 56 percent of households in South Africa connected to the national grid consume in average less than 50 kWh electricity per month (DME, 2003).
- South Africa is involved in an ambitious investment programme to increase the generation capacity. The investment portfolio also includes renewable energy options. Hydropower is already installed but there is only a limited potential to increase the capacity of hydropower due to the fact that South Africa is water stressed country.
- In March 2009, South Africa's energy regulator (NERSA) approved the first renewable energy feed-in tariff (REFITs) scheme. Four technologies are currently covered (wind, small hydro (less than 10 MW), landfill gas and concentrating solar power) and Eskom is obliged to purchase from renewable energy generators to fixed tariffs. The FiT are 1.25 R/kWh (0.11 Euro/kWh - wind), 0.94 R/kWh (0.082 Euro/kWh – small hydro), 0.9 R/kWh (0.078 Euro/kWh – landfill gas) and 2.1 R/kWh (0.18 Euro/kWh – concentrating solar power). In November 2009 NERSA approved a second round of REFITs covering solar power, biomass and biogas²⁰. The scheme will run for 20 years and the FiT can be adjusted yearly for inflation²¹. The REFITs scheme is one of the cornerstones of achieving the government's 10,000 GWh renewable energy target by 2013.

¹⁸ Source: <http://www.inthenews.co.za/2009/06/25/electricity-prices-up-by-313/>

¹⁹ Because electricity is not consumed in all households the Government of South Africa also approved the VAT removal on sales of paraffin to enable poor households to use this fuel for all energy requirements in an un-electrified household.

²⁰ Source: NERSA decision on Renewable Energy Feed-in Tariffs (REFITs) Phase II published November 2, 2009 <http://www.nersa.org.za/>

²¹ Source: information provided in the IEA database 'Addressing Climate Change Policies and Measures' at http://www.iea.org/textbase/pm/index_clim.html

3.3 Transport – vehicle taxation

Environmental considerations are playing a crucial role in the revision of the motor vehicle taxation scheme which is proposed to be in use from 1 March 2010. The current vehicle taxation scheme is solely based on the price. The aim of the proposed scheme is to address the environmental and social costs associated with the transport sector by promoting fuel efficiency, limiting the rapid growth of the number of vehicles on the roads and encourage the use of public transport (SARS, 2009).

The proposed scheme extends the existing one as (1) the *ad valorem* excise duty based on the retail price will be maintained and (2) the new duty component 'ad valorem emission tax rates on motor vehicles' will be included. The latter part of the vehicle taxation scheme is based on the CO₂ emissions measured in g per km²².

3.4 EFRs in the water sector

Dealing with the challenges the water sector is facing is one of top priorities of environmental policy in South Africa. These challenges do not only concern the availability of water but also water pollution and politicians are required to establish policies dealing with these risks. These policies have to take into account that the water and sanitation sector in South Africa is decentralised and organised along three tiers (Parliament of the Republic of South Africa, 2009):

- The national Government sets the overall policy.
- Water boards are organs of the State and are playing a key role in the South African water sector. They are predominately responsible for the provision of bulk water but are also carrying out the retail services and are operating wastewater treatment plants.
- Municipalities are providing most retail services.

The 2007 data on water infrastructure reveal that access to basic water services is improving over time: 88.6 percent of households have access to piped water as compared to 84.5 percent in 2001 and the figures are also showing an improvement concerning basic sanitation infrastructure as 55.1 percent of the households have flush toilet (sewerage system) in 2007. Only 8.2 percent of the households have no toilet at all in 2007 a drop from 13.6 percent in 2001 (National Treasury, 2008).

It should be again emphasized that pricing schemes, such as water and wastewater tariffs, must also be discussed when assessing the potential of the EFR concept. Improving the access to water is significant in the global fight against poverty and in promoting economic growth. However, developing countries are facing the challenge in mobilising the necessary funds for the expansion of the water supply and wastewater infrastructure. Water pricing is thereby seen as one of the key cornerstones for financing water infrastructure.

Table 4 highlights EFR instruments in the South African water sector. These instruments can also be subsumed as follows (National Treasury, 2008 and Moraka, 2006):

- Raw water tariff (also called water resources development charge)
- Bulk water tariff
- Retail water tariff
- Sanitation charge
- Bulk wastewater tariff
- Waste water discharge

²² For further information on the proposed new vehicle taxation scheme: SARS, 2009

This list illustrates that South Africa implemented a whole range of EFR instruments. Alongside these different instruments a nationally-funded subsidy scheme, i.e. municipal infrastructure grant and equitable share, for water infrastructure is in place²³.

As mentioned above, South Africa adopted a policy of providing free basic service including water supply and sanitation services to its population. Figures for 2006 are showing that more than 7 million households are receiving free basic water services (out of 9.87 million households having basic water services) and the respective figures in the context of free basic sewerage and sanitation services are 3.8 million households out of 7.7 million. The aim of this policy is to provide poor households with a basic supply of 6,000 l of water per month. This policy has different implications as for example the costs of the provision of the free basic water services have to be covered. These costs are not considered as municipal non-revenue water (NRW) but as revenue water which is billed at zero rate. This implies that the costs of providing these services to the population must be covered by other means: Free basic water services is financed from the local government equitable share, which is a constitutionally required portion of the annual national budget allocated to local governments, as well as through cross-subsidisation between water users (Gowlland-Gualtiere, 2007). The often implemented tariffication regime of South African water utilities accommodates this approach by designing increasing block tariffs, i.e. increasing the price of water (water tariff) immediately after the free basic water charge²⁴.

3.5 EFRs in the waste sector

Economic instruments are becoming more widespread in waste policies worldwide. This trend is also recognisable in South Africa although waste policy has not been assessed as one of the top priorities in the last South African State of the Environment report (DEAT, 2006). However, the Department of Environmental Affairs commissioned several studies during 2009 aiming to stimulate discussions and to provide insights as part of the process of preparing a new National Waste Management Strategy for South Africa. Two of these studies addressing the issue of applying EFR instruments in South Africa waste policy discussing the pros and cons of different instruments (Savage, 2009 and Goldblatt, 2009)²⁵.

Waste service provision also increased during recent years as 64.5 percent of South African households had access to some form of solid waste management service in 2007, i.e. an increase by almost 10 percent compared to the situation in 2005 (Savage, 2009)²⁶.

Local governments are responsible for delivering waste services and - as it is the case in the water and sanitation sector - intergovernmental financial flows between the national government and local government exists. These funds are used for financing the municipal solid waste infrastructure and services. User charges are generating about 62.7 percent of the waste revenues and 23.7 percent are coming from grants provided predominately by the national government (Savage, 2009).

The revenues raised from user charges do not cover the operating costs of waste service provision and the full cost recovery principle (user charges covering operation and maintenance (O&M) costs, depreciation, financing costs and return on capital employed) is by far not achieved. Achieving at least the cost recovery of the O&M costs would require increasing both the collection rate and user charges.

Most waste user charges are not designed by incorporating environmental considerations as they are set at a fixed monthly rate and are based on the nature of service, property value or property sizes (Goldblatt, 2009)²⁷. This design does not promote any waste reduction efforts by the households as there is no incentive

²³ More information on the situation of water financing in South Africa can be found in National Treasury, 2008, Chapter 7. The policy of granting infrastructure subsidies is not consistent with one of the key conclusions of the World Panel on Financing Water Infrastructure (the so called 'Camdessus Report') is to achieve full cost recovery in the water sector.

²⁴ Further information on tariffication regimes implemented in some municipalities: Thombeni, 2009.

²⁵ Another recent report must be mentioned as it analyses whether the economic instruments implemented in developed country can be applied in the developing country context (Godfrey and Nahman, 2007).

²⁶ Different figures are presented by Goldblatt writing '*that only 39% of households or 50% of the total population of South Africa is receiving a regular waste collection service*' (Goldblatt, 2009).

²⁷ See also DEAT, 2002

given to change their behaviour. But on the other hand this design regime is easier to administer than charging households based on the actual amount of waste generated and may be at this stage of the economic development of South Africa a better option. However, revising the design scheme by taking into account international best practice and experiences gained in developed countries over the last two decades should definitely be contemplated to be included in the new National Waste Management Strategy currently prepared by the Government of South Africa.

Currently the Government of South Africa is in the process of establishing the policy of free basic refuse removal (Government of South Africa, 2009). The draft policy assesses the financial implications of free basic refuse removal. It states that the current user charges for waste collection varying between R 17 and R 124 per household per month and are set at a rather *ad hoc* approach concluding that '*this may be an indication of failure to understand the full costs of services that are provided* (Government of South Africa, 2009)'. A figure of R 360 as a benchmark for the full costs of waste services which is based on 2008 National Treasury estimate is instead being used.

South Africa must be described as a forerunner in Africa of implementing a plastic bag levy as this EFR instrument was introduced in 2004/05. The policy was successful as the levy helped to reduce waste (SARS, 2009).

4. OVERVIEW OF STUDIES ON EFR

During recent years a whole range of studies on EFR were undertaken in South Africa often focusing on climate change issues and water policies. This is not surprising as that these policy fields are very high on the priority list of the Government of South Africa (DEAT, 2006). The bigger part of these studies is assessing the macro-economic, environmental as well as social implications of the introduction of an environmental or energy/CO₂ tax²⁸. The main findings of the studies identified in the context of this project are briefly discussed below.

Akinboade et al. (2008) are analysing the long-run relationship of price as well as income changes of transport fuel consumption. They estimate a price and income elasticities of -0.47 and 0.36 implying that petrol demand in South Africa is price and income inelastic. The estimated elasticities are in the same range at the results of studies undertaken in other countries but at the lower end. According to the authors the absence of reliable public transport and high costs of public transport can be a reason for this result. The conclusions drawn by the authors are: '*Our results hence show that price increases alone will not discourage gasoline consumption and that the increases in income will only induce small increases in gasoline demand. These results could assist policy makers in isolating the distributional impact of their energy policy in South Africa* (Akinboade et al., 2008)'. This result could be of great interest for the Government of South Africa as it means that an increase in fuel duty rates – which can be described as rather low when compared with other sub-Saharan countries - will generate higher tax revenues but will have an almost negligible effect on fuel consumption, i.e. it can be expected that emissions from the combustion of transport fuels will increase. However, a dramatic increase in the fuel duty rates – also when this increase is done gradually over a longer time period – may lead to social disturbances because of the unequal distribution of income as higher transport fuel prices caused by higher energy taxes will induce higher public transport costs. However, as other studies shown and discussed below, a clever EFR package with increases in tax rates and properly designed recycling measures of the revenues generated can overcome these shortfalls.

A computable general equilibrium (CGE) model of South Africa developed by a team of scholars (van Heerden et al., 2006, 2007 and 2008) is used to analyse the potential for a double or triple dividend if the revenues raised from an energy-related environmental tax are recycled to households and industry through lowering existing taxes. One of the studies (Van Heerden et al., 2007) assesses the effects of four

²⁸ We do not claim that this list of studies discussed in this paper is complete and exhaustive. This constraint must be seen in the context of limited time and budget available for undertaking the literature search.

environmental taxes and three revenue-recycling schemes. The environmental taxes are (i) a tax on greenhouse gas emissions, (ii) a fuel tax, (iii) a tax on electricity use, and (iv) an energy tax. The recycling of the revenues is either been done via (i) a direct tax break on both labour and capital, (ii) an indirect tax break to all households, or (iii) a reduction in the price of food. The most effective scheme in terms of decreasing emissions, increasing GDP, and decreasing poverty is achieved when any one of the environmental taxes is recycled through a reduction in food prices, i.e. in the words of the authors a triple dividend can be realised. It is worthwhile to mention that the authors are not referring to the concept of environmental fiscal reform in their studies, although the results of the CGE model are completely in line with the underlying principles and reasons for implementing EFR. All three aspects are considered and the results are showing that environmental, fiscal/economical as well as poverty reduction benefits can be achieved simultaneously when the EFR activities are cleverly designed.

An extended version of the CGM model by including a water tax into the modelling framework came up with the same results that the reduction of a tax on food, i.e. a reduction in the end-user food prices leads to a triple dividend. Based on these findings the authors are recommending (Van Heerden et al., 2006):

A tax break on food financed by:

1. A carbon tax on all emissions from burning fossil-fuel at the point of combustion, applied to the CO₂ emissions by sector.
2. A water charge on both irrigated field crops and some sectors of the mining industry.
3. Our results show that such a tax reform would increase the real income of the poorest households, increase economic growth, increase employment, reduce carbon dioxide emissions, and reduce water use.

The model was also applied to analyse the impacts of water economic instruments on the South African economy (Letsoala et al., 2007 and V. Heerden et al., 2008). The implications on water consumption, GDP as well as equity considerations are studied. The options for new EFR activities are manifold and with positive implications (Letsoala et al., 2007):

A tax of irrigated agriculture does render double dividends with all three recycling schemes (direct taxes, indirect taxes, food taxes), and a triple dividend with one of the three (food taxes). An additional water charge on the mining sector, particularly on coal and other mining, stands a high chance of yielding dividends in terms of less water used, positive impacts on poverty reduction amongst the poor and positive impacts on the economy. Again, a reduction in indirect taxes, particularly on food, is more effective than a reduction of direct taxation.

Other EFR studies are looking into the effect of a carbon tax as climate change is high on the political agenda and currently the pros and cons of a carbon tax versus an emission trading scheme are discussed. Winkler and Marquard (2009) are studying the implications of a carbon tax as a policy tool aiming to reduce greenhouse gas emissions. The authors are addressing the potentials of a carbon tax in a qualitative way and do not offer any quantitative findings. They summarise (Winkler and Marquard, 2009):

A carbon tax should be considered among the range of instruments available to South African government, economy and society. It should be considered as part of a broader suite of options, including regulatory and economic instruments. ...

Economic instruments may be highly efficient in allocating scarce resources. They do not however, tend to do well to address distributional concerns. Equity demands that poor households, in particular, be shielded from any burden, e.g. higher energy prices. Off-setting incentives, such as food subsidies or reduced VAT on basic goods, could be financed to achieve such a goal. Another option would be to finance energy efficiency and renewable energy in social housing. The principle would be to make the package a net benefit to the poor – and not to treat the tax as a revenue-raising instrument.

Their conclusion corresponds to the underlying concept of an EFR as the focus is not solely directed to the revenue generating potential but rather to how the revenues should be used in a welfare maximising effort as shown by Van Heerden et al. (2006, 2007 and 2008)²⁹.

The significance of implementing economic instruments as part of a whole policy package is presented in the study by Devarajan et al. (2009). The authors are underlining that the existence of labour market distortion, such as labour market segmentation and unemployment, are crucial as they *'will likely dominate the welfare and equity implication of a carbon tax in South Africa. ... if South Africa were able to remove some of the distortions in the labor market, the cost of carbon taxation would be negligible. In short, the discussion of carbon taxation in South Africa can focus on considerations other than the economic welfare costs, which are likely to be quite low* (Devarajan et al., 2009)³⁰.

5. PROPOSAL FOR EFR IN SOUTH AFRICA

The review of the current situation and discussion surrounding the application of economic instruments in South Africa clearly reveals a large interest of many stakeholders. Proposals of reforming the existing instruments, introduction of new economic instruments, such as environmental taxes and charges as well as emission trading schemes, are being made as discussed above. The political condition is well advanced in South Africa as many of the proposed economic instruments are part of a larger EFR package and what is equally important is the fact that the proposals are not only analysed qualitatively but also quantitatively revealing that a careful and clever design of an EFR can lead to fiscal, environmental and poverty reduction benefits.

The draft policy paper on environmental fiscal reform published by the National Treasury in 2006 discussed in detail different options for environmental fiscal reform measures in South Africa (National Treasury, 2006, Chapter 6) distinguishing between:

- Options for reforming existing environmentally-related taxes and charges;
- Options for introducing new environmentally-related taxes;
- Options for reforming non-environmentally-related taxes with perverse environmental incentives; and
- (Tax) incentives to improve environmental outcomes.

Attention is also given to the question of earmarking (also called hypothecating) of revenues generated from environmental taxes and charges. Apart from thinking of new economic instrument, revising existing ones must not be forgotten. The discussion above showed that user charges for the provision of services, such as water supply and waste disposal, are currently rather low as their revenues are not covering the O&M costs. A reform is timely as the funding for extending the environmental infrastructure has to be subsidised from the national budget. The revision of user charges alongside the full cost recovery principle is not an easy task as the Government of South Africa committed itself to the free delivery of basic services. Data are showing that about 71 percent of all households who are receiving basic water services were eligible for free basic water (National Treasury, 2008). The implications of this policy is that the consumption of the services exceeding the threshold which is provided by free has to be charged with a rather high tariff if the full cost recovery principle should be adhered to as promoted for example by the World Water Council (WWC, 2006). The commitment of free basic service delivery has to be seen in combination with the huge inequalities of income and wealth in South Africa. In contrast, environmental considerations are playing no role as the delivery of free services may have contradictory implications in terms of changing the behaviour of citizens. A study analysing the impact of free basic electricity on energy consumption found out *'that 50 kWh per month of*

²⁹ The application of emission trading scheme is also studied in South Africa, see for example Tyler et al., 2009.

³⁰ The potential loss of competitiveness is regularly being identified as an obstacle for implementing EFR instruments. This aspect is studied by Seymore et al. (2009) by analysing the implications of the introduction of a multilateral electricity generation tax in South Africa.

FBE [the free basic electricity allowance per household] resulted in a 21.85 kWh per month increase in average consumption in one of the sites, and an insignificant increase in the other (Davis et al., 2008)³¹. The authors are further clarifying their results (Davis et al., 2008):

The study shows that the main determinants of consumption of electricity for low-income households are income and ownership of cooking appliances. The number of times the FBE was received did increase the consumption of electricity and, as such, was a key determinant of consumption in the post-implementation analysis, overshadowing the other variables when included in the model. The presence of the FBE has a significant impact on the overall consumption of electricity, as one would expect with subsidies for what could be termed essential services.

This result is not really surprising as the approach of granting free basic services do correspond with providing subsidies, although it cannot be said that this policy is a direct government subsidy. However, the policies of granting free basic services may not lead households to a conscious and environmental friendly behaviour as the price (or incentive) mechanism is eliminated for the amount which households are getting for free. Water-saving and electricity-saving behaviour is discouraged at least at the margin.

At this stage it also seems to be worthwhile to state that reforming subsidies is also a component of an environmental fiscal reform. A new momentum in the politics of reforming subsidies, in particular fossil fuel subsidies, started with the communiqué of the G 20 leaders in Pittsburgh in September 2009 (Leaders' Statement, The Pittsburgh Summit, September 24-25 2009, G20 Communiqué):

Building on these efforts and recognizing the challenges of populations suffering from energy poverty, we commit to:

- Rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption. As we do that, we recognize the importance of providing those in need with essential energy services, including through the use of targeted cash transfers and other appropriate mechanisms.

Proposals for new EFR instruments are also been made for the waste sector (Savage, 2006 and Goldblatt, 2006) and the transport sector (Paterson, 2009) based on international practice. However, it must always be asked whether international practice derived mostly from developed countries should be the basis for policies and instruments implemented in South Africa³¹.

The role of renewable in the energy portfolio of South Africa is being dealt with the introduction of the above mentioned feed-in tariff. This EFR measures also addresses climate change issues. A rather novel EFR instrument in the context of climate change policy is the Clean Development Mechanism (CDM) as one of the flexible mechanisms the Kyoto Protocol provides. The idea behind this instrument is that developers of low greenhouse gas emission (GHG) projects in developing countries can generate credits which can be sold at the GHG / carbon market thus obtaining financial resources. This instrument is not discussed in the EFR reports of the World Bank (2005) and OECD (2005) although the revenues generated from selling these credits can raise substantial funds. A rather small number of CDM projects are realised although the potential for them in South Africa is large. The Government of South Africa must be aware of the situation and as measure to promote clean investment a tax exemption for CDM revenues are in place (Pegels, 2009).

6. CONCLUSION

This paper gives an insight into the South African politics of environmental fiscal reform. The underlying concept of EFR is well-known and also implemented in different economic sectors. Further options for environmental fiscal reforms are widely discussed by different stakeholders. Crucial for the increased interest

³¹ See for a detailed discussion of this subject: Godfrey and Nahman, 2007.

and attention given to market-based instruments (MBIs) for environmental policy and environmental fiscal reform in general was the work and efforts undertaken by the Tax Policy Chief Directorate of the National Treasury. As mentioned in the last 'State of the environment' report, environmental policy in South Africa was dominated by regulatory standards (DEAT, 2006). A rethinking is noticeable in South Africa realising that MBIs could support the achievement of environmental goals and objectives in a cost effective and efficient manner. This thinking is also in the process of being transposed into the political reality as for example the Budget 2009/10 proposed new MBIs as well as the revision of existing ones by taking into account environmental considerations. It is also recognized that the design of MBIs is of highest importance for achieving not only environmental objectives but also realising fiscal/economical benefits and eradicating poverty, i.e. achieving the objectives of an environmental fiscal reform.

One of the overall objectives of this project is to establish criteria identifying areas with good potential for successful EFR support in EC development cooperation. It can be stated that South Africa is really advanced in implementing EFR as compared to other developing countries which is not too surprising as it is far more developed than other sub-Saharan countries. It should therefore be thought whether other developing countries can learn something from the South African policy approach towards EFR.

Key findings of the work of the South African National Treasury are summarised in different reports and presentations and are listed as follows (National Treasury, 2006 and Morden and Hemraj, 2007):

- Market-based instruments, particularly environmentally-related taxes and charges, may have certain advantages over traditional regulatory (command-and-control) approaches and may be a more efficient way to address certain environmental concerns whilst also contributing to fiscal objectives
- A coherent framework is presented to consider and evaluate the use of market-based instruments

The consultative process in drafting this paper highlighted the importance of:

- Establishing clear goals and objectives – both environmental and where relevant fiscal objectives;
 - Justifying the need for government intervention and clearly analysing the source of market failure or policy failure;
 - A clear and early signal of government intent to address the environmental concerns; and
 - A clear assessment of the different policy options that takes into consideration: design and administrative aspects, potential distributional impacts, potential competitiveness impacts, the appropriate sphere of government intervention, and compatibility with broader government policy objectives.
- The development of environmentally-related tax proposals must be undertaken according to a specific set of criteria and should, as far as possible, be adequately integrated into existing government policies.
 - Earmarking revenues from environmentally-related taxes is not in line with sound fiscal management practices
 - However, incentives and the "soft" earmarking of tax revenues, where appropriate, could be considered; and
 - Special attention should be given to the possible distributional and competitiveness implications of environmental taxes and charges. The appropriate design and phasing-in of such taxes could deal with these two important aspects.

The first step in the whole policy development was to commission a study on environmental taxes aiming '*to provide a framework for orientation, as well as identify criteria for the development and evaluation of environment related tax policy proposals, thus laying the foundation for a sound and coherent fiscal policy framework* (Morden and Hemraj in GTZ, 2008)'. It is as well decisive to assess the role EFR could play in the country specific conditions, in particular under consideration of the regulatory framework and the prevailing institutional capacities. Without having them in place the effectiveness of all new policy instruments is limited.

Support aiming to overcome these capacity constraints may be a task which can be followed up in EC development cooperation.

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