EcoMetrix Africa (Pty) Ltd
Building 1
43 Peter Place, Bryanston
Johannesburg 2060, South Africa
011 463 1009

EcoMetrix On…

Utilising South African CERs as off-sets under the South African carbon tax

Date: 6th of October 2012 By: Henk Sa and Stacy Lee Naicker

Summary

It is likely that from the **1st of March 2013** South Africa's main industrial sectors will be exposed to a carbon tax of **120 ZAR/tCO_2** which will escalate at **10% per annum**. The carbon tax will be based on the quantity of fossil fuel utilised within an installations multiplied by the emission factor of the specific fossil fuel to determine the taxable emissions. Initially the carbon tax will be reduced via the application of a tax free threshold and several 'relieves' that can be staggered to reduce the carbon tax burden by a maximum of 90%. In addition to this an installation can reduce its carbon tax burden by using CERs as offsets up to a maximum allowed per sector. In practise this means that a CDM project in South Africa would be able to utilise and commercialise its CERs at a price in excess of **120 ZAR/CER** irrespective of the developments within the global carbon market.

Background

Although the scale and timing of the implications is still under debate with the global scientific community the existence and cause of climate change is not. There is strong global consensus that climate change is caused by the anthropogenic (e.g. man-made) emissions of GreenHouse Gasses (GHG's). EcoMetrix operates on the forefront of the fight against climate change and specialises in the mitigation activities towards climate change applied in Southern Africa. One of the main activities it deploys in this regard is the development of project under the Clean Development Mechanism (CDM). The CDM aims to quantify the reduction in GHG emissions from project activities in developing countries. These Certified Emission Reductions (CERs) represent a value that can be commercialised and by doing so generate addition income for the project creating a financial incentive to move towards the development of a more sustainable economy. This paper provides an overview of the options a CDM project (the 'Project') has to utilise and commercialise its CERs as off-sets under the Carbon Tax.

The South African carbon tax

The two main economic policy instruments available for putting a price on carbon and curbing the output of GreenHouse Gasses (GHG) emissions are carbon taxation and emissions trading schemes. A carbon tax seeks to reduce emissions through the price mechanism directly, while emissions trading schemes established targets for specific levels of emissions through the trade in allowances. To date, the relative merits and feasibility of these policies have been demonstrated primarily in Europe.

Uniform application of carbon taxes, however, tends to be regressive, because a disproportionate share of the tax burden falls on the poor. In a South African context the government would need to counteract this tendency,

addressing other economic development imperatives such as poverty alleviation, and ensuring access to basic and affordable energy services for low-income households. The design of the tax should include compensating measures to minimise adverse impacts on low income households[1]. The Budget Review 2012, indicates that there would be soft earmarking of the tax revenues the allocation and extent of which is currently under development.

As described by treasury in its paper 'The Carbon Tax Option' the Carbon Tax will be applied as an 'upstream tax' based on the carbon content of the fuels at the start of the process and applying an appropriate emission factor to determine the taxable emissions. Industry would have a self-monitoring system to evaluate emissions using a structured standard. The emissions would be reported to the South African Revenue Services (SARS) and the Department of Environmental Affairs (DEA) would verify these emissions on behalf of SARS.

In a global context the emissions based on the onsite consumption of fossil fuel consumption of an installation are defined as 'scope one emissions' where the emissions of GHGs are categorised as:

- **Scope 1**: On-site direct emissions (e.g. fossil fuel consumption);
- **Scope 2**: In addition to scope 1 all indirect emissions in the form of grid electricity (e.g. Eskom coal based electricity);
- **Scope 3**: In addition to scope 2 all other indirect emission associated to the operation of the installation (e.g. transport emissions, etc.).

As per the below diagram the three scopes are not mutually exclusive and are commonly used as an expansion model for quantifying an installation's emissions by initially starting with the determination of an installation's scope 1 emission after which this is expanded to include scope 2 and over time scope 3.

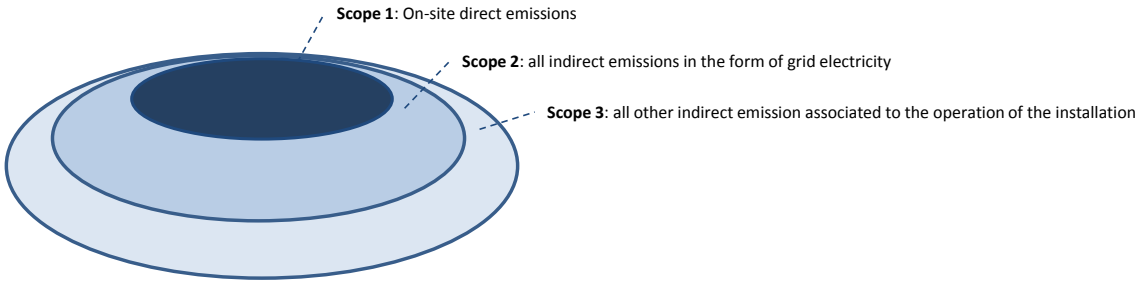

Figure 1: the different scopes of emissions

Although the Carbon Tax will only be applied to emissions related to scope 1 the products and services acquired by an installation which would result in its scope 2 and 3 emission will include a 'pass through' of the Carbon Tax costs from suppliers where these products and services represent their scope 1 emission (e.g. an installation will not be taxed on the carbon component of the electricity it consumed but its electricity costs will go up due to the inclusion of the electricity suppliers Carbon Tax to its off-taker.

Although the finer details of the design of the South Carbon tax are still under development there are more and more signals from within the South African authorities that the Carbon Tax will come into effect at the start of

[1] Source: National Treasury; Discussion paper for public comment, Reducing Greenhouse Gas Emissions: The Carbon Tax Option.

the 2014 fiscal year[2]. To allow a reasonable period for the transition and allow industry and consumers to adjust to the inclusion of the Carbon Tax within goods and services, the South African treasury proposed that the Carbon Tax be implemented in several phases with an increasing price level starting at 120 ZAR/tCO_2. The first phase is anticipated to run from March 2013 till February 2020 followed by a second phase from March 2020 to February 2025. During the first phase in of the Carbon Tax the tax rate will be increased by 10% per annum.

A tax free threshold will be put in-place to provide relief for trade exposed sectors as well as sectors that generate process based emissions. The table below provides an overview of the basic tax free thresholds and the additional 'relieves' that can be staggered on top of it per sector.

Sector	Phase 1 Basic Tax Free Threshold	Maximum Trade Exposure Allowance	Process Emissions Allowance	Total	Maximum offset percentage
Electricity	60%	-	-	60%	10%
Petroleum (coal to liquid)	60%	10%	-	70%	10%
Petroleum - oil refinery	60%	10%	-	70%	10%
Iron & steel	60%	10%	10%	80%	5%
Aluminium	60%	10%	10%	80%	5%
Cement	60%	10%	10%	80%	5%
Glass & ceramics	60%	10%	10%	80%	5%
Chemicals	60%	10%	10%	80%	5%
Pulp & paper	60%	10%	-	70%	10%
Sugar	60%	10%	-	70%	10%
Agriculture, forestry and land use	60%	-	40%	100%	-
Waste	60%	-	40%	100%	-
Fugitive emissions: Coal	60%	10%	10%	80%	5%
Other	60%	10%	-	70%	10%

Table 1: Proposed emissions thresholds for sectors[3]

As per the above table the basic tax free threshold would be set at 60% for all sectors with a maximum obtainable tax free threshold of 90% taking into account an adjustment of the basic threshold and allowances to be applied. Per installation the basic tax free threshold can be adjusted with the so called Z factor. The Z factor aims to incorporate the measured and verified carbon intensity of the output of an installation in relation to the benchmarked intensity for the sector the installation is categorised within. In this way installations emitting higher than the sector benchmark would have a lower basic percentage tax free threshold and vice versa.

[2] The 2014 fiscal year runs from March 2013 to February 2014.
[3] Source: National Treasury, 2012. Tax proposal: http://www.treasury.gov.za/documents/national%20budget/2012

A practical example of the application of the Carbon Tax

The above description of the working of the Carbon tax becomes clearer when applying them to a practical example. When assuming that:

- An installation within the Iron & steel sector;
- The sector's carbon emission intensity benchmark is 0.9 tCO_{2e}/ton of output (e.g. steel);
- The installation consumes 50,000 tons of coal/year;
- The coal has a carbon content of 3 tCO_{2e}/tcoal;
- The installation's carbon emissions intensity is 0.85 tCO_{2e}/ton of output (e.g. steel);
- The installation has full trade exposure;
- The operation of the installation results in additional process emissions.

The installation is exposed to the following components of the Carbon Tax:

Component	Exposure	Cumulative exposure
Basic tax free threshold (Iron & Steel)	60%	60%
Z factor correction (0.91 / 0.85 = 1.0706)	60% * 1.0706 = 64%	64%
Maximum Trade Exposure Allowance (10%)	10%	74%
Process Emissions Allowance (10%)	10%	84%
Total Carbon tax threshold of the installation:		**84%**

The installation's absolute emissions per year are 150,000 tCO_{2e} (3 tCO_{2e}/tcoal * 50,000 tons of coal) of which 84% sits below the installation's Carbon Tax threshold. This leaves 24,000 tCO_{2e} (16% of the total) of the installations emissions exposed at a carbon tax of 120 ZAR/tCO_{2e} resulting in a Carbon Tax burden of **2.88 million ZAR/year** for the installation.

In addition to adjustments to the basic tax free threshold and several additional 'relieves' the Carbon Tax will allow a further reduction per installation of either a maximum of 5% or 10% by allowing installations to utilise off-sets. As is the case with most components of the Carbon Tax the details of how these carbon off-sets can be utilised is not defined yet however the most established system for the generation of high quality certified offsets (e.g. carbon credits) are CERs generated under the CDM paragraph of the Kyoto protocol. As South Africa is a signatory to the Kyoto protocol it is reasonable to assume that South Africa will allow the use of CERs generated in South African as part of these off-sets.

Utilisation of CERs as carbon offsets within the Carbon Tax

The offset component of the carbon tax is limited to 5% for certain sectors and 10% for other sectors. When looking at the total Carbon Tax burden that can be alleviated via the utilisation of offsets it is estimated that these will represent approximately 30 million tCO_2e/year. The current annual production of CERs in South Africa is on average 614,294 CERs/year from a limited number of projects which leaves a substantial supply gap for

offsets. It is therefore reasonable to assume that a South Africa CDM project will be able to utilise and/or commercialise all of its CERs generate as offsets under the Carbon Tax. When considering the different options a project has to utilise the CERs as offsets under the Carbon Tax the following should be considered:

- **In-house utilisation of the Project's CERs as offsets**: When an installation consumes fossil fuels it is exposed to the Carbon Tax and it can reduce this burden by 5% to 10% by utilising the CERs it has generated with its own CDM project as offsets. Having said that not all installations will consume fossil fuels to the extent that they can utilise all the CERs generated as in-house offsets under the Carbon Tax. It is therefore reasonable to assume that an installation will utilise some CERs in-house as offsets and will commercialise the remaining CERs utilising some of the below options;
- **The sale of the Project's CERs as offsets to other parties exposed to the Carbon Tax**: CERs generated by a CDM project within South Africa can be sold to other parties that are exposed to the Carbon Tax. Approximately 83%[4] of the country's GHG emission result from the energy sectors (e.g. Electricity, Petroleum (coal to liquid) and Petroleum – (oil refinery)). The companies within these sectors will be the primary buyers of CERs to utilise them as offsets towards their Carbon Tax. Initially their demand will be almost limitless due to the gap between demand and supply of CERs within South Africa;
- **Utilising the Project's CERs as offsets and selling them into the global carbon market**: CERs generated by a South African CDM Project can be traded into a range of global carbon markets (e.g. the European Union Emission Trading Scheme, the Australian Emission Trading Scheme, etc.). The current draft of the Carbon Tax regulations does not exclude the possibility of accounting for CERs as offsets and selling them into one of the global markets at the same time. Although this might be perceived as 'double dipping' treasury has introduced the Carbon Tax as a policy instrument for curbing the output of GHGs to combat climate change and CERs are commonly used as a marker for environmentally positive behaviour. For example a wind farm in South Africa receives a preferential electricity rate to incentivise the development of more environmentally friendly electricity system. The same wind farm can claim CERs under the CDM and the one incentive does not cancel out the other;
- **Banking the Project's CERs for utilisation as offsets in the future**: During the first phase of the Carbon Tax the tax rate will increase by 10% per year. This is substantially higher that the current inflation rate of 5.3%[5]. Since CERs don't expire a project could consider banking the CERs it generated and accumulate them over time having their value as offsets increase by 4.7% per year (e.g. 10% - 5.3%).

In conclusion this means that a CDM project in South Africa would be able to utilise and commercialise its CERs at a price in excess of **120 ZAR/CER** irrespective of the developments within the global carbon market. However more importantly the CERs generated by a South African CDM project will represent a strategic asset that can be utilised in a number of ways to increase the value and competitive position of the project and its owner from a direct, indirect, domestic and international perspective.

[4] Source: DEA, 2011. South Africa's Second National Communication under the United Nations Framework Convention on Climate Change. Department of Environmental Affairs, Republic of South Africa, Pretoria.
[5] source: https://www.fnb.co.za/rates/cRatesView.html.

About the Authors

EcoMetrix Africa has been at the forefront of the fight against climate change since its inception. The EcoMetrix team is made up of a group of highly motivated and capable individuals originating from all walks of life. This paper was written by Henk Sa and Stacy Lee Naicker:

Name: Henk Sa

Qualifications: BsC, MsC

Profile: Henk Sa has been in the carbon industry for almost a decade of which most of his time has been spent on the African continent. He has been responsible for the development of several methodologies and registered several CDM projects.

Name: Stacy Lee Naicker

Qualifications: BsC

Profile: Educated as a chemical engineer Stacy gained several years of operational experience within large chemical operations before joining EcoMetrix where she currently is in charge of most of its modelling activities.

Disclaimer:

This Paper has been prepared by EcoMetrix Africa (Pty) Ltd (EcoMetrix Africa) for the exclusive use by the Client only.

EcoMetrix Africa has taken all reasonable care to ensure that the facts stated herein are true and accurate in all material aspects. However, EcoMetrix Africa nor any of their directors, officers, employees, advisors or agents makes any representation or warranty or gives any undertaking of any kind, express or implied, as to the actuality, adequacy, accuracy, reliability or completeness of any opinions, forecasts, projections, assumptions and any other information contained in, or otherwise in relation to, this Paper, or assumes any undertaking to supplement any such information as further information becomes available or in light of changing circumstances.

No liability of any kind whatsoever is assumed by EcoMetrix Africa any of its directors, officers, employees, advisors or agents in relation to any such opinions, forecasts, projections, assumptions or any other information contained in, or otherwise in relation to, this Paper.

This Paper is confidential as it contains company confidential information as well as the intellectual property of EcoMetrix. Therefore, this Paper shall not be released to third parties without the express written permission has been given by all parties involved provided that the Client and EcoMetrix Africa may release the Paper, or parts thereof, to those of their directors, officers, employees, advisors or agents as may be necessary to complete the Paper or to progress future work items that may be based on the Paper.