



## *The post 2012 carbon market for CDM projects in South Africa*

---

Date: 31<sup>st</sup> of August 2012

By: Henk Sa & Melissa Kambare

---

### Summary

At COP17 the Parties to the Kyoto protocol agreed to enter into a process that would lead to new binding targets from either 2017 or 2020. It was also agreed that the **CDM infrastructure would remain intact** and operational until at least 2020. In the absence of a commitment period between the end of 2012 and 2020 CERs generated from CDM projects in South Africa will remain valuable and tradable into a range of domestic and regional markets. The most promising from a South African perspective are the EU ETS and the offset component of the South African carbon tax which is expected to come into effect in March 2013. Depending on the type of project and the maturity of that project under the CDM, it is anticipated that the CERs from the project can be utilised and traded within a price range of between **100 and 250 ZAR/CER** between 2013 and 2020.

### 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 and expedited by the anthropogenic (e.g. man-made) emissions of Greenhouse Gases (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 projects under the Clean Development Mechanism (CDM). The CDM aims to quantify the reduction in GHG emissions from project activities in developing countries. These emission reductions represent a value that can be commercialised and by doing so generate additional income for emission reduction projects creating a financial incentive to move towards the development of a more sustainable economy. This article provides an overview of the current status of the CDM and assesses the market potential of Certified Emission Reductions (CERs) produced by a South African CDM project after 2012.

### Status of the CDM

The annual Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) signed the Kyoto protocol in 1997 which in turn came into force on the 1st of January 2005. The protocol represents an international agreement to stabilize GHG concentrations in the atmosphere at 1990 levels. Parties to the Convention are divided into those countries that take on the responsibility of achieving the convention's goal; the Annex 1 countries (all developed countries and countries with economies in transition), and those that do not, the non-Annex 1 countries (developing countries). Annex 1 countries commit to reducing

their output of GHGs below 1990 levels by committing to a maximum amount of GHG that they can emit between 2007 and 2012. Under the protocol non-Annex 1 countries, such as South Africa, do not have such a commitment or mandate but have the opportunity to realise emission reductions on a project basis for the generation of CERs under the CDM. CERs issued by the UNFCCC CDM Executive Board (EB) can be traded into Annex 1 countries to help them realise their Kyoto commitments.

During its 17th gathering in the South African city of Durban (COP17) the parties to the protocol agreed to enter into a process that would lead to binding commitments for Annex 1 countries between 2015 and 2017 to take effect from 2017 or 2020. The convention also agreed that between 2012 and 2020 the CDM 'infrastructure' consisting of the UNFCCC CDM EB, its Secretariat, processes, procedures and platforms will remain in effect even though no new binding targets will be in-place for the Annex 1 parties after 2012. In practice this means that it will remain possible to generate CERs from CDM projects until 2020 even though there is no global Kyoto driven demand for them.

### Historic CER price development

By definition CERs are emission reductions generated by a project registered under the CDM which are widely used for trading carbon credits between CDM project developers and compliance buyers under the Kyoto protocol (e.g. Annex-I countries or their industry via a national or regional trading scheme). A CER represents the equivalent of one tonne of CO<sub>2</sub> that was not emitted into the atmosphere. CERs are designed for international legal obligations towards the reduction of emissions. To ensure the quality of a CER the process of generating CERs is surrounded by several systematic checks and balances which contribute to the relatively high transaction costs associated with the production of CERs. This however therefore results in the highest quality of carbon credits in the world making it more valuable and exceedingly tradable than other carbon credits generated via different less stringent carbon standards.

In addition to the fact that the CER market is completely artificial (its demand is driven by agreed targets and not by a fundamental demand) compared to other commodity markets, it is also considered very 'young'. This new and artificial nature of the market has resulted in a very volatile market price for CERs and high uncertainty of the future price curve. The graph below provides a historic overview of the CER price.



Figure 1: Historic CER price in Euros<sup>1</sup>

<sup>1</sup> Source: Bloomberg 31<sup>st</sup> of August 2012, <http://www.bloomberg.com/quote/BNSCER:IND/chart>

At the date of publication of this article CERs were trading at their lowest point in history of 2.85 Euro<sup>2</sup> as the long term historic highs and lows of CERs ranged from 33.35 Euro/CER to 7.93 Euro/CER with an average price of 19.43 Euro/CER. Although the reasons for this low price level are mainly related to technical market reasons (e.g. over allocation within Europe’s large emitting industries and oversupply by CERs from Chinese fugitive emissions) the demand for high quality CERs from Africa has drastically increased over the years.

### Market fragmentation

To create a realistic and sustainable incentive for sovereign nations, industries (large and small) and the population at large (current and future), the costs associated with the emission of GHGs should be internalised at a cost in the range of GBP 18.00 and GBP 35.00 based on real, measurable and permanent emissions into the atmosphere<sup>3</sup>. Although this is not incorporated as a fundamental aspect within the COP negotiations (between the parties) the implications of the requirement to maintain a minimum price level for a CER to create sufficient incentive for a project developer to develop emission reduction activities should be understood at the negotiation level between the parties. This has resulted in a flurry of activity to either directly or indirectly create a balance between the demand and supply for CERs which would sustain a price level that could create material incentives towards the mitigation of climate change.

The first commitment period under the Kyoto protocol ends on the 31<sup>st</sup> of December 2012 and at the time of publishing this paper no new binding targets have been agreed on between the parties that have ratified the Kyoto protocol. In general this market uncertainty has contributed to the low price levels for CERs on the international market, however it has also given rise to a wide range of domestic and regional markets that are open (subject to different entrance criteria) for CERs. The diagram below provides an overview of the different regional and domestic markets that will drive the demand for CERs beyond the end of the first commitment period of the Kyoto Protocol on the 31st of December 2012.

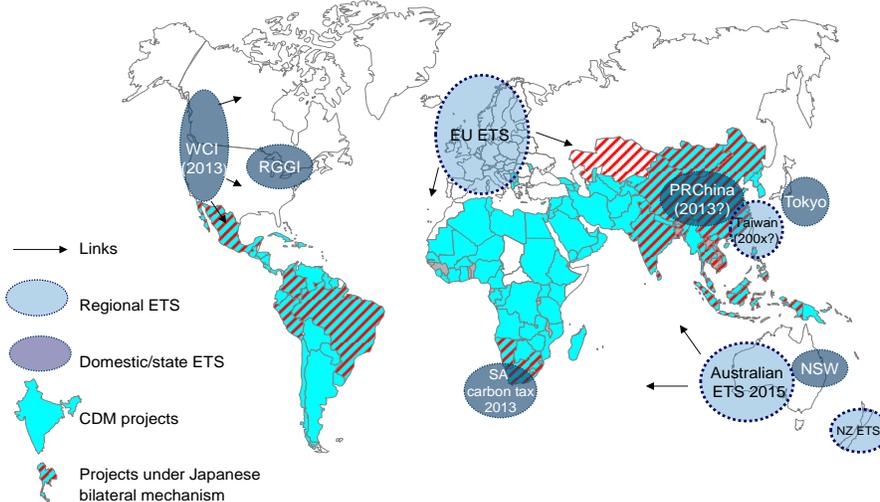


Figure 2: The global carbon market beyond the first commitment period of the Kyoto protocol<sup>4</sup>

<sup>2</sup> Source: European Energy Exchange, 31<sup>st</sup> of August 2012, <http://www.EEX.com/en/markets>

<sup>3</sup> Source: Stern Review on the economics of climate change, <http://www.cambridge.org/9780521700801>

<sup>4</sup> Source: Perspectives (GmbH) and EcoMetrix Africa team analysis

## Market fragmentation

When looking at potential markets into which a South African based CDM project can sell CERs the following markets should be considered:

- **The European Union Emission Trading Scheme:** The European Union Emission Trading Scheme (EU ETS) is the largest carbon market in the world and responsible for the transaction of approximately 80%<sup>5</sup> of the world trade in carbon credits (e.g. 1011 million tCO<sub>2</sub>e/year). The EU will allow CERs into its regional trading scheme, European Union Emission Trading Scheme or EU ETS from CDM projects or Programme of Activities (PoAs) up to a level of approximately 280 million tCO<sub>2</sub>e/year. Although this access comes with some limitations to the type of project (e.g. excludes large hydro) and the type of gas prevented from migrating into the atmosphere (e.g. no HFC and PFC project and limited N<sub>2</sub>O projects) it provides a secure market for CERs beyond the end of the first commitment period of the Kyoto protocol. However the most critical of the requirements for CERs which have access to the EU ETS is that they have to be generated by a CDM project or PoA which is registered before the end of 2012. This limitation does not apply to Least Developed Countries (LDCs) which South Africa is not;
- **The South African carbon tax:** The South African Treasury proposed that a Carbon tax be implemented in several phases with an increasing price level of up to 120 ZAR/tCO<sub>2</sub>. The first phase is anticipated to last from 2013/2014 to 2019/2020 with a second phase from 2020 to 2025. The carbon tax will be levied on actual carbon dioxide equivalent (CO<sub>2</sub>e) emissions calculated using 'agreed' methods. Although there are currently no agreed methods to calculate a tCO<sub>2</sub>e under the carbon tax, it has been announced that the tax system will allow for off-sets to be used to reduce a portion of their carbon tax liabilities on an installation or at company level. It is therefore reasonable to assume that South Africa as a party to the Kyoto protocol will allow the use of CERs generated in South African as part of these off-sets. The off-set component of the carbon tax is limited to 10% of the total tax burden and is estimated to represent approximately 30 million tCO<sub>2</sub>e/year which may be used as offsets instead of being sold as CERs into the global market;
- **The Australian Emission Trading Scheme:** On the 12<sup>th</sup> of October 2011 the Australian lower house of Parliament passed legislation which imposes a carbon tax onto the country's large emitters as of the 1st of July 2012. The tax for emitting 1 tCO<sub>2</sub>e is capped at 23 AUD and escalates at a rate of 2,5% per annum until the 30<sup>th</sup> of June 2015. After a period of three years, the carbon tax will be converted into a cap and trade system. From mid-2015, the Australian Emission Trading Scheme (AETS) will be officially linked to the EU ETS. This therefore means that the initial price floor and cap of 15 and 20 AUD will not be adopted as the EU ETS does not allow for the setting of minimum price of CERs. In practice, as of the 1st of July 2015 carbon credits from the CDM can be sold in to the AETS and EU ETS market;
- **Other:** In specific cases CERs can be sold into the Western Climate Initiative (WCI) as implemented by the US state of California or into Japan via a set of bi-lateral agreements between Japan and several other countries. South Africa is in the process of signing several bi-lateral agreements including one

---

<sup>5</sup> Bloomberg, New Energy Finance, 2011

with Japan that would allow the supply of South African CER into these countries. Another example of selling small volumes of CERs into non-Kyoto markets would be trading the CERs into the voluntary carbon market on a case by case basis. Individually these markets do not represent a substantial demand for CERs however combined they are estimated to add up to approximately 40 million tCO<sub>2</sub>e/year.

As is clear from the above assessment, in the absence of a second commitment period under the Kyoto protocol the demand for CERs will be fragmented and subject to specific rules and conditions applied by the different markets.

### **CER price forecast for South Africa CERs**

An issued South African CER can be sold into a wide range of markets provided it meets the entrance criteria of that specific market at a specific moment in time. In order to generate a realistic price forecast for such a CER it is important to keep in mind that an issued South African CER represents a high quality emission reduction from the least industrialised continent in the world and therefore will remain in high demand at premium prices for the foreseeable future.

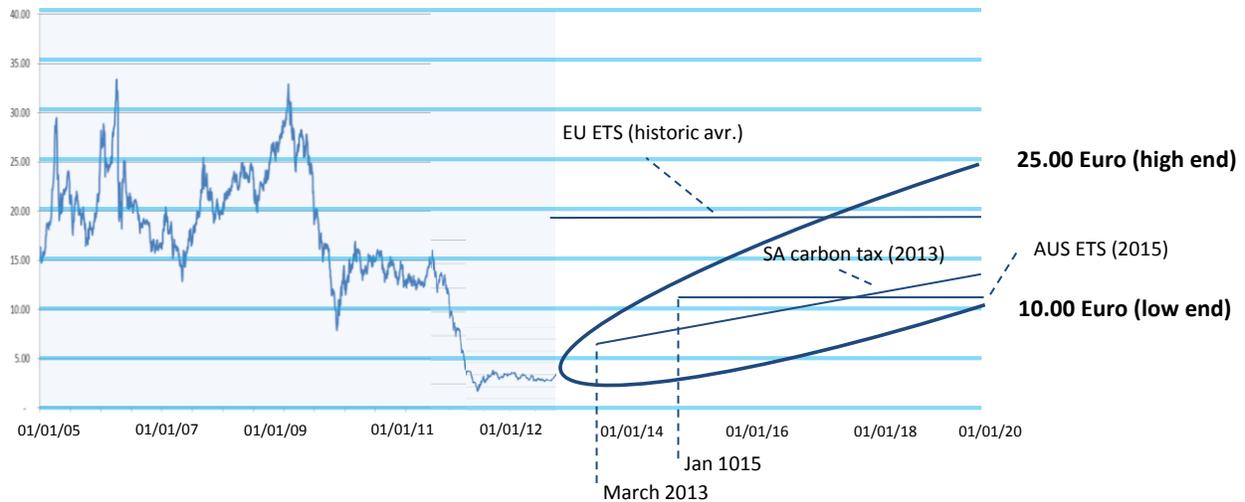
In the absence of a new commitment period under the Kyoto protocol CERs from South African projects can be sold into a range of domestic and regional markets. To be able to leverage this 'African premium' when selling CERs requires a flexible approach where a project's CERs can be sold into for example the EU ETS or the New Zealand ETS or used as off-sets in the South African carbon tax at various points in time. Assuming that the project developer has the ability (both technically and commercially) to operate in such a flexible way, Figure 3 provides an overview of the historic CER prices and a forecast to 2020 CER prices which was derived from the global demand and supply forecast and can be utilised to this effect. Global annual demand between 2013 and 2020 is forecasted to be around 383 million CERs/year<sup>6</sup>.

Subject to the different timelines and dynamics of the individual markets the demand per year between 2013 and 2020 is forecasted at 415 million CERs/year of which the; EU ETS contributes 280 million CERs/year, the South African Carbon tax 30 million CERs/year, the Australian ETS 65 million CERs/year and the remainder (Other) markets 40 million CERs/year. This leaves a demand/supply gap of 32 million tonnes or 7.7% of demand. Although both price and volume elasticity are demand oriented (e.g. it is more difficult to start producing CERs than it is to stop producing CERs irrespective of the price level) a gap of 7.7% is considered too small to create upward price pressure of CERs.

However when looking at it from the perspective of a CER generated in South Africa this dynamic is very different. For example the current annual production of CERs in South Africa is on average 614,294 CERs/year from nine projects which leaves a supply gap for SA carbon tax offsets of 79%. The graph below provides an overview of the historic CER prices and a forecast up to 2020 taking into account the different market timelines and dynamics from a South African CER supply perspective.

---

<sup>6</sup> Source: UNEP Risoe CDM pipeline may 2012



**Figure 3: historic CER prices and a forecast to 2020**

Taking into account the demand and supply curve as well as the different markets and their dynamics it is EcoMetrix expert opinion that CERs generated by a South African CDM project will be able to trade or utilize its CERs in the period between 2013 and 2020 at a market price of between 10.00 and 25.00 Euro or at an exchange rate of 10 ZAR/Euro between **100 ZAR/CER and 250 ZAR/CER**.

### 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 Melissa Kambare:



**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:** Melissa Kambare

**Qualifications:** BsC,

**Profile:** Melissa gained several years of experience in the South African energy sector where she looked at electricity pricing before joining EcoMetrix. She is currently involved in the development of several of EcoMetrix's PoA's.

## 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.