How CERs give project developers a competitive advantage under the REIPPP

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The South African government has pledged to reduce its total annual GHG emissions by 34% below its business-as-usual trajectory by 2020. One of the incentive instruments the government has put in place to realise this objective is the REIPPP, a competitive bidding process whereby the lowest bidders are awarded long term power purchase agreements at the offered price in R/MWh. One way of improving a project's competitive edge is via the cross subsidising of its REIPPP bidding price with the revenue stream from the sale of CERs it can generate under the CDM.

Now that the third bidding round under the REIPPP is in full swing and rounds 4, 5 and 6 have been announced, project developers are investigating all possible avenues to find a competitive edge. Cross subsidising will allow a project to bid at a price that is between 9% and 27% lower than it would be able to do without the CER revenue stream. Registering a REIPPP project under the CDM therefore becomes a must if a project wants to stand any chance in the competitive bidding process.

Background

EcoMetrix Africa specializes in climate change mitigation activities applied in Southern Africa. In addition to providing climate change mitigation policy advice, one of its main activities is the development of projects and programmes of activities (PoAs) under the clean development mechanism (CDM). This paper looks at the utilization of certified emission reductions (CERs) as a tool to create a competitive advantage for project developers who participate in the REIPPP.

The REIPPP

South African ranks as the 12th most carbon intensive economy in the world[1]. This is to a large extent as a result of its historical dependence on coal as the country's energy source for both electricity and petrol. To address the climate change concerns related to its carbon intensity the government has pledged to reduce its total annual GHG emissions by 34% below its business-as-usual trajectory by 2020. Based on global best practices the South African government has developed a suite of instruments that will either penalise industry and/or consumers for emitting GHGs or reward industry and/or consumers for reducing their GHG emissions. One of the carrot instruments the government has put in place to realise this objective is the so-called REIPPP which provides independent power producers with an advantageous electricity tariff for their renewable electricity. The program is designed as a competitive bidding process whereby the lowest bidders are awarded long term power purchase agreements at an offered price in R/MWh for the renewable energy their projects supply to the South African grid.

After a rocky start under the name renewable energy feed-in tariff (REFIT), the government's ambition to establish a framework under which the generation of renewable energy in South Africa is encouraged via the provision of a preferential electricity tariff to the suppliers of renewable energy in the country took shape with the launch of round 1 of the REIPPP in early 2011. Round 1 came full cycle in October 2012 with the signing of power purchase agreements (PPAs) and associated documents with the successful projects by the Department of Energy (DoE).

Technology	Allocation Round 1			Allocation Round 2			Round
	Project	MW	Bid price (R/MWh)	Project	MW	Bid price (R/MWh)	3, 4, 5, 6 MW
Onshore wind	8	633,99	1143	7	562,4	897	4465,68
Concentrated Solar Thermal (CSP)	2	150,00	2690	1	50.00	150	
Solar PhotoVoltaic (PV)	18	631,53	2758	9	417,1	632	
Biomass	–	N/A	N/A	–	–	N/A	
Biogass	–	N/A	N/A	–	–	N/A	
Landfillgas	–	N/A	N/A	–	–	N/A	
Small hydro	–	N/A	N/A	2	14,30	1030	
Total:	**28**	**1416**	**N/A**	**19**	**1044**	**N/A**	**6925**

Table 1: REIPPP capacity allocation over the different rounds.

The REIPPP bidding process consists of three stages; the application stage during which project developers compile their bid and submit this (accompanied by detailed project information) to the DoE before the closing date; the shortlisting stage where the bids are evaluated and the winning bids given 'preferred bidder status'; and the contracting stage during which the preferred bidders must comply with all the requirements set by the DoE (e.g. financial closure) before the end of a set time window. On the 5th of November the contracting stage of round 2 was finalised and in May 2013 the application stage of round 3 will be closed.

During the completion of the contracting stage of round 1 the DoE announced that a proposal for the extension of the REIPPP with an additional 3200 MW had been sent to National Energy Regulator of South Africa (NERSA) for approval [2]. Table 1 provides an overview of the projects per technology, their capacity and pricing for round 1 and 2 as well as the capacity available per technology after the closure of round 1 and 2.

The total REIPPP capacity adds up to 6925 MW of which 2460 MW has been allocated and 4364 MW is still available. In addition, it becomes apparent that the bidding price has dropped on a weighted average by approximately 28,5% between round 1 and 2 due to the increased competition. The expectation is that the increased level of competition will continue in rounds 3, 4, 5 and 6 and the bidding price will drop further due to this. This makes it more and more important for project developers to find ways to become more competitive when submitting a bid under the REIPPP if they want to have a reasonable chance of being successful in the process. One way of becoming more competitive is via the commercialisation of the climate change benefit included in the nature of these types of projects. The next section provides an overview of how the climate change benefit in the form of carbon credits under the CDM can be developed, followed by a section on how they can be utilised to improve the competitiveness of a project within the REIPPPP bidding process.

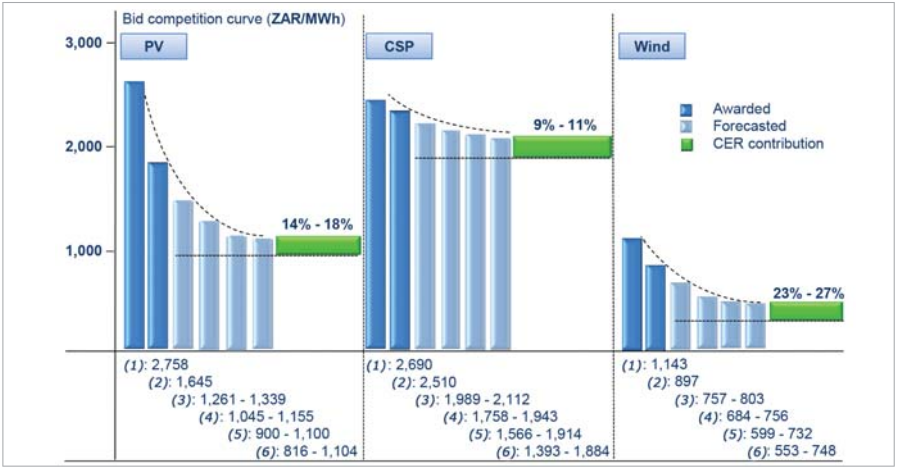

Fig. 1: REIPPP bid competition curve rounds 3 to 6.

Renewable Energy projects under the CDM

Global communities concern about the climate change impact of anthropogenic GHG emissions resulted in the signing of the Kyoto Protocol in 1997. The protocol aims at curbing the output of GHGs via a range of instruments. The most relevant instrument from a South African perspective is the CDM which allows the generation of CERs from emission reduction projects in a developing country, such as South Africa. A CER represents 1 t of carbon dioxide equivalent (tCO_2e) not emitted into the atmosphere and can be traded into a wide range of markets. Depending on the characteristics of the emission reduction project and the demand and supply dynamics within the different markets, a CER can be sold at a price of between R100 – 250/CER [3].

Due to its high dependence on coal the South African electricity grid is one of the most carbon intensive in the world with a grid emission factor of 1,01 tCO2e/MWh [4]. In practice this means that a renewable energy plant could claim approximately 1,01 CERs for every MWh it dispatches onto the South African grid which it then could sell at a price of R100 – 250/CER. The process of claiming CERs for an emission reduction project can be done via two distinct models. The first is a so called stand-alone CDM project whereby a project is registered under the CDM enabling it to claim CERs for the electricity it produces. The downside to this approach is that the registration process is lengthy (18 to 20 months) and costly (R1- million to 2- million).

A quicker and cheaper alternative would be for a project to participate in a programme of activities (PoA). A PoA is an umbrella structure which similar projects can join in order to be able to generate CERs. Joining a PoA is not only quicker (3 to 6 months) and cheaper (R200k – R400k) than developing a stand-alone CDM project but also less risky due to the fact that a project can only join a PoA once the PoA is registered, hence the registration risk has already been absorbed by the PoA itself. At this moment in time there are 12 PoAs under development in South Africa that could accommodate renewable energy projects that supply electricity to the grid. However, of these 12 PoAs only between 1 and 3 are estimated to be registered under the CDM by the 31st of December 2012 making those CERs that are generated eligible into the largest carbon market, the European Union Emission Trading Scheme (EU ETS) (80% of the global market) [5] and therefore able to achieve additional income for a REIPPP project, of R100 – 250/CER.

Competitive advantage within the REIPPP

When considering the South African grid emission factor of 1,01 tCO_2e/MWh it becomes apparent that a REIPPP project could improve its bid by on average R176/MWh (i.e. R101 at the low end of the CER price forecast and R252,5/MWh at the high end of the price forecast) if it would utilise 100% of the project's climate change benefit towards its bidding price. During round 1 this would have represented 9,48% of the average successful bidding price and in round two 12,49%. When considering the expected increases in competition for rounds 3, 4, 5 and 6 one can assume that the successful bidding price will drop even further over time.

However, there are limits to how much further the price could drop. The most obvious limit would be the price at which electricity can be sold onto the grid without the utilisation of the REIPPP. Although several tariffs mechanisms are available for this the most commonly used is the MegaFlex tariff which would allow a project developer to sell electricity into the grid at a price around R509 / MWh depending on, among others, the load profile and location of the generation facility. Another limitation to how far the price in the bidding process can drop is determined by the levelised cost of electricity of a specific technology, excluding the cost of capital of the project, as this represents the technical cost of generating electricity with such a technology. Most of the renewable energy technologies are still relatively new and therefore exposed to improvements over time hence the technical minimum cost improves (e.g. becomes lower) over time. The graph in Fig. 1 provides an indication of the estimated bidding prices in rounds 3, 4, 5 and 6 for the three main technologies under the REIPPP, taking into account the Megaflex rate and technological improvements over time.

When looking at the graph it immediately becomes apparent that the anticipated price drop for PV will be the largest. This is partially the result of the limited number of projects participating in round 1 and the expected growth of bidders in rounds 3 to 6. Based on the figure above, the competitive advantage resulting from subsidising the bid price with the average forecasted value of the CERs that a project could generate under the CDM in round 3 is approximately 14% and increases up to 18% by round 6. Although CSP received substantially lower tariffs in round 1 and 2 than PV, the inherent cost of the technology results in a much smaller drop in rounds 3 to 6. Having said that, the competitive advantage that can be derived from utilising the CER revenue stream to subsidise the bidding price still lies at around 9% in round 3 and increases to 11% by round 6. When looking at wind it becomes apparent that the winning tariffs in round 1 and 2 were substantially lower than for PV and CSP in line with the lower technology costs. However this also means that the competitive advantage resulting from the CER revenue stream is substantially higher than for PV. For round 3 it is estimated to be around 23% increasing to 27% by round 6.

In conclusion this means that project developers that are interested in participating in rounds 3 to 6 of the REIPPP could decrease the price of their bids by between 9% and 27% making the registration of a REIPPP project under the CDM a must if a project wants to stand any chance in the competitive bidding process.

References

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