



Africa and the Clean Development Mechanism: What Determines Project Investments?

DIRK RÖTTGERS and ULRIKE GROTE*

Leibniz University of Hanover, Germany

Summary. — African countries have hardly used the opportunity to implement CDM projects and thereby turn environmental problems into business and development opportunities. This paper finds out why by identifying factors of CDM partnerships. Our gravity model analyzes flows of Certified Emission Reductions (CERs) between host and financier countries. Findings show that foreign direct investments, official development assistance, and trade have a positive influence on project attraction. A distinction between project initiation and CER flow size shows that the specific shortcomings of African countries lie with the initial attraction of investors. This points to an inadequacy in the initial process of project generation.

© 2014 Elsevier Ltd. All rights reserved.

Key words — Clean Development Mechanism, Africa, foreign direct investment, official development assistance, gravity model, Heckman

1. INTRODUCTION

Only in 2005, eight years after it was drafted to mitigate global climate change, the Kyoto Protocol (KP) entered into force. It sets maximum amounts of greenhouse gas emission rights allowed per year by individual developed countries. One of the most important instruments created as a consequence is an emission rights trading scheme to manage these emission ceilings. Each country allocates the amount of rights under its ceiling to domestic companies. The main market for this is the EU Emission Trading Scheme (EU ETS; [Newell, Pizer, & Raimi, 2013](#)) which calls these tradable rights EU Allowance Units (EUA). Companies in countries under such a scheme can further increase their emission rights by financing an emission reduction project in an eligible country—non-Annex countries in terms of the KP, which mostly are developing countries—by converting proven saved emissions into EUA. Generally, a partner from an industrialized country supports a Clean Development Mechanism (CDM) project in return for the resulting emission rights (Certified Emission Reductions; CERs). The possibility to invest in projects abroad is an opportunity for companies and state organizations in industrialized countries to produce emission rights cheaper than buying them on carbon markets like the EU ETS ([Tian & Whalley, 2008](#)). This is a targeted outcome of the Kyoto Protocol ([Michaelowa & Dutschke, 1998](#)), partly for the promotion of technology transfer to developing countries through CDM projects.

In large parts of the second phase of the EU ETS from 2008 to 2012 demand and therefore the price of certificates was low ([Medina, Pardo, & Pascual, 2014](#)). Nevertheless, the price difference that existed between the EUAs and CERs still gave a sufficient incentive to invest in CDM projects throughout both periods. Yet, potential for emission reduction partnerships in most developing countries was largely untapped ([Shishlov & Bellassen, 2012](#); [UN, 2010](#)).

Of the more than 7,000 registered projects up to spring 2014, above 80% have been started as partnerships. These partnerships are projects by companies or state organizations in developing countries which are supported by partners in industrialized countries in return for emission rights

([UNFCCC, 2014](#)). The CDM concept envisions this support as bi- or multilateral financial backing or other help to gather project funds, alongside possible technical and other support ([Michaelowa, 2007](#)). The remaining less than 20% of the CDM projects are financed by companies in developing countries themselves and are therefore not the cases of interest here. Of the circa 80% of projects formed with project partners, only about 3% are located in Africa ([UNFCCC, 2014](#)). As the next section will show, this small share of CDM project partnerships is not simply caused by the lack of overall development in Africa, when compared to other regions in the world. The question is: What does cause this lack? We analyze the hypothesis that specific factors originating in the lack of overall development coalesce with how project partnerships are formed under the CDM. We hypothesize that in African countries a lack of development comes together with a very specific lack of capability to start CDM partnerships. Analyzing this first of two hypotheses of this paper may help identifying constraints for CDM project investments in Africa. Overcoming these constraints could help African countries create payment benefits and spill-over effects attributed to CDM projects, such as technology transfer.

In this respect it is important to know which channels project realization takes. The process of starting CDM projects is long-wound and complicated. Decision-making in this process might be influenced differently by certain factors like foreign direct investment (FDI) ([Dinar, Rahman, Larson, & Ambrosi, 2008](#); [Niederberger & Saner, 2005](#); [Winkelman & Moore, 2011](#)), trade ([Dolsak & Dunn, 2006](#); [Costantini and Sforza, 2014](#)) and aid flows ([Dolsak & Bowerman Crandall, 2007](#)) at different stages. Though some of these factors might influence project creation in general, they might not be crucial for the stage at which African countries are at a disadvantage

* We would like to thank the participants of the 117th EAAE Seminar for their helpful comments, Theda Gödecke, Patrick Puhani, and Katharina Raabe for their valuable input on data handling details, Veit Preuß, Bernd Boven, and Nele Degener for excellent research assistance and three anonymous referees for their insightful critique. Final revision accepted: May 1, 2014.

to attract projects. Other factors might be crucial at just that one stage but not at others. Identifying these factors and their more particular influence will help targeted re-structuring of either facilitating agencies at the country level or re-alignment of the CDM process. Evaluating channels and their influence on project initiation and expansion is therefore a second research question of this paper. The hypothesis behind this research goal is that certain factors can be bolstered and used at certain stages and that African countries do not necessarily fail equally at all stages or at providing all promoting factors. Finding the relevant stage of the CDM process and relevant factors would make targeted partnership support at the level of the CDM process easier.

For this analysis we use an augmented gravity model regression on a macro panel data set reaching from 2005 to 2012. The gravity model is well suited to analyze bilateral partnerships on the macro level (e.g., Kimura & Todo, 2010; Petri, 2012; Seghir, 2009), particularly since most of the channels, like FDI, aid and trade as well as other possible influences for CDM projects, like geographical distance or having a common language, are bilateral factors.

To set the stage for an answer to the two posed research questions, the next section will review relevant literature and describe the links between FDI, official development assistance, (ODA, a proxy for aid) and CDM projects further. After that, Section 3 discusses the employed gravity model and data for the regression analysis, before the actual results of the regression analysis are presented and discussed in Section 4. Section 5 will close with summarizing remarks on climate change policy and further research needs.

2. BACKGROUND AND LITERATURE

The establishment of CDM projects, although facilitated by the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Environmental Program (UNEP) and others (Hinojroza, 2008), seems to be particularly hard for African countries. While not all regions are equally successful at attracting CDM projects, particularly African countries seem to lack CDM activity compared to other CDM eligible countries. That newer programs for CDM facilitation such as the registered programs of activities, memorandums of understanding, and the CDM loan scheme (UNEP, 2012) are targeted at or over-proportionally benefit African countries is only one indicator for the very real lack of African involvement in the CDM.

Figure 1 shows the overall distribution of CERs of registered projects by country. No African country can claim to

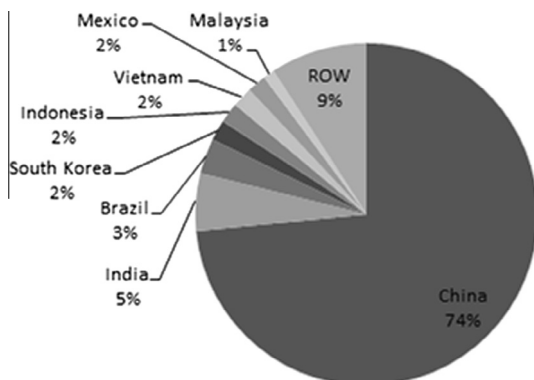


Figure 1. Share of produced CERs by country. (2005–12; source: UNFCCC (2014)).⁴

even have one full per cent of all CERs, while all other regions find a representative among the top CER producers. Moreover, in Figure 1 China's dominance is striking (for a treatment of Chinese CDM involvement see e.g., He and Morse (2013), Maraseni (2013) and Xie, Shen, and Wang (2013)). It eclipses not only the runner up, India, by more than a magnitude, but also the rest of the world (ROW) sevenfold, not to mention dwarfing African efforts. The Chinese influence which is apparent here already will serve below to explain the importance of many factors, but by far not all or the lack of African projects.

While the average yearly growth in African CERs exceeds that of any other UNFCCC-region, including Developing Asia, during either of the two relevant EU ETS phases (European Commission, 2013), growth estimation based on UNFCCC (2014), not shown), it still cannot make up for the low starting point of partnerships at the beginning of the CDM. Consequently, African countries in total received still only 4% of CERs in 2012, and only 3% of all CERs over the whole running time of the CDM.

Basic economic intuition fails to explain this lack of projects in Africa, as indicated in Namanya (2008): The number of projects is small even when set in relation to factors associated with low opportunity for greenhouse gas abatement, like GDP and GDP per capita, as the following figures show.¹

Figure 2 shows the average number of CERs per total GDP PPP per capita, a proxy for economic welfare, separately for African countries and all other eligible countries from 2005 to 2012. Figure 3 shows the average number of CERs per total GDP PPP, a measure for the size of the economy.

Both, total GDP and GDP per capita have been identified as determinants of CDM partnerships (Dinar et al., 2008; Wang & Firestone, 2010): a richer or a larger economy generally point to more abatable greenhouse gas emissions and a better economic capability for abatement. But the welfare or size of an economy alone does not explain the number of CERs. As can be seen from Figures 2 and 3, the conditional CER output in Africa is generally much lower than in other regions. Similarly, comparing numbers of CERs issued per total CO₂-equivalent (CO₂e) emissions and per capita emissions, respectively, show a large gap between African and other CDM-eligible countries, as Figures 4 and 5 show.

If no other particular factor influences African project numbers, the relation of those indicators to CERs should be similar to that in other regions. Figures 6 and 7 clearly show, however, that even when the relation between the above

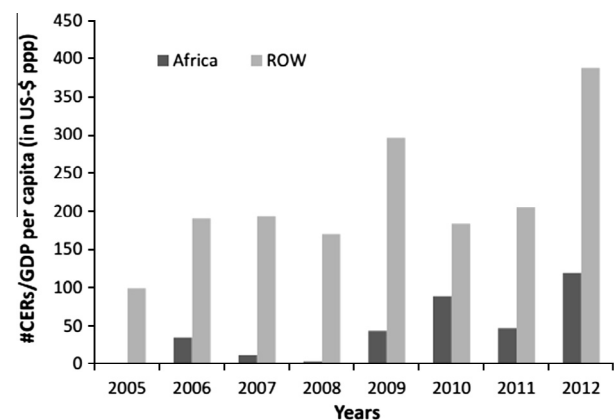


Figure 2. Comparison certificates relative to GDP, per capita Africa versus other eligible countries (2005–12; source: UNFCCC (2014) and World Bank (2014a)).

Download English Version:

<https://daneshyari.com/en/article/991385>

Download Persian Version:

<https://daneshyari.com/article/991385>

[Daneshyari.com](https://daneshyari.com)