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ENVIRONMENTAL EVALUATION OF CLIMATE CHANGE POLICIES IN BRAZIL: IMPACTS OF THE INDUSTRIAL PLAN AND A PROPOSED CARBON TRADING MECHANISMS FOR THE CEMENT SECTOR

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SUMMARY

This paper set out to investigate the environmental impact of climate change policies in Brazil, particularly regarding the Industrial Plan as established by the National Climate Change Policy. It also assesses the impact of a carbon trading mechanism. It considers the effectiveness of these strategies as tools to improve environmental quality through the reduction of GHG from one of the largest emitters in the industrial sector – the cement sector. This empirical approach implements a preliminary model in accordance with the aforementioned Industrial Plan along with an alternative scenario based on the design principles of the EUETS. All scenarios assumed increases in production capacity of 5% per annum by 2020. This research highlights that the scenarios modelled have the ability to reduce emissions. Indeed, the proposed carbon strategy based on the EUETS could help meet the Industrial Plan target. However, further research is required into the economic implications of the proposals.

ABSTRACT

Several strategies and political instruments are available for policymakers to tackle climate change mitigation, for instance command-and-control versus market-based policies. As a market-based approach, greenhouse gas (GHG) emissions trading schemes (ETSs) are operational in several countries. These schemes are based on the principle of cap and trade and are considered as key policy instruments to address climate change. Whilst some schemes have been up and running for some time, other schemes have just commenced operation and others are still under construction or consideration. The carbon pricing mechanism ensures that GHG emitters face a marginal cost for emissions that reflects the damage they cause.

The European Union Emissions Trading Scheme (EUETS), the world's largest and longest running scheme, has been in operation since 2005. Since then other schemes have been initiated in New Zealand, Tokyo and certain US states. The expected total number of schemes around the world is 16 by 2015, and in the ten year period from 2005 to 2015 the share of global emissions covered by ETS will have increased by more

than 70 per cent (FRERK, 2014). Other governments at various levels are also considering an ETS to mitigate their GHG emissions, including Brazil.

The EUETS is currently in Phase III (2013-2020). Laing et al (2013) outline that experience to date has suggested that the fundamental design of the EUETS meets a key environmental objective of capping power and industrial greenhouse gas emissions. However, the scheme has experienced various setbacks in the first two phases of its existence such as over-allocation of allowances leading to a price crash, windfall profits from free allocation and issues with financial fraud. Furthermore, the inflexibility in the structure of the EUETS cap, and its inability to adjust to recent radically changing economic conditions threatens to undermine the scheme and its ability to provide the necessary incentives for emissions abatement. Experience of this scheme to date therefore offers lessons for ETS schemes being considered elsewhere.

Currently, Brazil is one of the world's greatest emitters of GHGs (COSTA; ALVES, 2014). The country enacted its National Climate Change Policy (PNMC) in December 2009 (Law No. 12.187/2009). The law sets out Brazil's policy on climate change and aims to promote transition to a low-carbon economy through emissions reductions from several areas. In the law, the country adopted a national voluntary commitment to reduce GHG emissions by 36.1% to 38.9% compared to business as usual projections for 2020, as communicated to the UNFCCC.

The PNMC confirms the national targets announced at COP15 but also recommends the adoption of economic instruments in order to promote the achievement of these targets through credit and fiscal mechanisms. The provision does not specify the principles for a national carbon market, but does allow for the national stock exchanges to be integrated into the scheme. In Brazil, there are already carbon market mechanisms (such as CDM) to encourage greenhouse gas emission reduction projects, as well as a system for the negotiation of carbon credits in the Brazilian Mercantile & Futures Exchange (BM&F), but not essentially a cap and trade market. A technical working group led by the Ministry of Finance was established to make proposals for a national carbon market (WORLD BANK, 2012). However, whilst this domestic ETS has been considered it has not been developed yet (ICAP, 2014).

Another strategy outlined by the PNMC was the establishment of sectoral plans. Goals for the manufacturing industry were included in the Industrial Plan. The design and implementation of the plan stem from measuring, reporting, verifying and reducing emissions from industrial activity by 5% per annum from 2012 to 2020.

It seems that Brazil has greatly improved its regulation and actions to avoid climate change. Whilst considering that single regulatory instruments are not likely to be the most efficient and effective to address a particular environmental problem (GUNNINGHAM; GRABOSKYK, 1998), the development of sectoral plans, if coupled with appropriate economic instruments, might consequently offer opportunities for Brazil to increase the efficiency of its transition to a low-carbon economy, as stated in Seroa da Motta (2010).

The main focus of this paper is to develop an environmental evaluation of the climate change policies in Brazil, particularly the Industrial Plan and a potential carbon market. Through an empirical approach, a preliminary model is implemented to measure the environmental impact of reducing carbon emissions from the cement manufacturing sector in Brazil. In global terms, Brazil is the 5th largest producer and the 4th largest consumer of cement and still has significant capacity to increase production to meet projected demand for housing (approximately 6.3 million new houses) and infrastructure development (such as ports, airports, roads and sanitation).

The model is based on the aforementioned Industrial Plan along with an alternative scenario based on the design principles of the EUETS. All scenarios assumed an increase in production capacity of 5% per annum. The following are the scenarios modelled: i) Business as Usual (BAU) Scenario with no carbon strategy, technological or mitigation measures; ii) Brazilian Industrial Plan Scenario: a reduction of emissions by 5% per annum from 2012 to 2020; iii) Scenario based on EUETS: a reduction in the cap by 1.74% each year until 2020.

The model developed as part of this research combines existing data from relevant European and Brazilian stakeholders with projections on carbon allocation and trading mechanisms based on the EUETS. The main conclusion of this research is that the scenarios modelled have the ability to reduce emissions. Indeed, the proposed carbon strategy based on the EUETS would help meet the Industrial Plan target. However, further research is required into the economic implications of the proposals.

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