

POLICY BRIEF

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**The hidden trade-off between
climate policy and
sustainability:
an obstacle or a source of
incentives to achieve an
agreement?**

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ABSTRACT

The possible outcomes of climate negotiations in view of a future commitment after the Kyoto protocol have been mostly evaluated on the basis of their economic costs and the risk of growth slowdown, or in consideration of the feasibility of possible coalitions. However, the effect of such policies on Sustainability has hardly been considered. This becomes a major challenge since achieving a Sustainable Development has been recognized to be one of the main goals of modern societies. Given that climate change is a global problem, this matter should be considered not only at the regional and national levels but most importantly at the worldwide level, as it should be made sure that mitigation policies have an overall positive effect once all components of Sustainability are considered.

This Policy Brief introduces the study of Sustainability within an international mitigation effort, taking as a reference point the pledges of the Copenhagen Accord proposed after COP-15. The analysis of its possible implications is then studied using the FEEM Sustainability Index (FEEM SI), a comprehensive measure which summarizes economic, social and environmental components.

The results are not as straightforward as one may expect. While a global reduction of GHGs will greatly improve the environmental component, it generally has a negative effect on the economic and social spheres. Moreover, despite the usual debate on the economic costs of climate policies, the economic pillar is not as negatively affected as the social one. It is therefore crucial to introduce social policies to attenuate the social costs of climate policy alone. Such combinations are more likely to lead to a Sustainable Development, and therefore to be accepted by developing countries, which will allow progress on climate negotiations.

Policy Challenge

Today the main concern of climate policy is focused on curbing greenhouse gas emissions with the purpose of limiting global warming. There is no doubt that the outcome of different climate policies - if implemented effectively within a cooperative framework - will not only reduce the risks associated with climate change, but will also improve environmental sustainability. Nevertheless, reaching an agreement to enforce such policies involves going past important obstacles, such as changing our behaviour and incurring costs that go beyond the economic field, such as overcoming technologic constraints as well as relevant effects on the social sphere.

Part of the solution resides in a set of incentives that allow different countries to reach an agreement. In order to identify the incentives the analysis should focus not only on the benefits of reducing the adverse effects of climate change, but also on the different trade-offs that this task will entail, including economic and social costs. In this context, a Sustainability Framework offers a versatile approach to the analysis, since it takes into account three of the most important aspects in climate policy evaluation: environmental concerns, economic costs and social impacts.

This Policy Brief addresses the major challenge of implementing climate policy with a Sustainable approach, considering the trade-offs between environmental benefits and socio-economic costs. It focuses on the implementation of an international climate agreement reflecting the Copenhagen Accord pledges and attempts to answer these questions: Would the Copenhagen approach make us more sustainable? Would the economic and social costs offset the environmental benefits? Finally, is it possible to achieve ambitious climate targets without harming social and economic development?

Introduction

One of the main issues of climate negotiations is defining what Greenhouse Gases (GHGs) emission reductions level should be demanded of developing countries, since part of the challenge of limiting GHG emissions is the social cost that it will cause. This challenge is clearly more relevant for developing countries where the immediate priority is meeting social and

development needs. If the costs of climate policy fall back on society, especially where it is more vulnerable, it is not certain that climate policy will improve Sustainability as social costs can offset the improvement in the environmental sphere.

While there is an ample literature on the costs of climate policy, it usually focuses on the balance between economic costs and environmental benefits. Social costs are overlooked, even though the main concern with the implementation of global climate policies is the negative effect it may have, especially on particularly vulnerable societies.

No studies so far have attempted to analyse the trade-offs between these three components and to assess the effect of climate policy on overall Sustainability. This is partly because the matter is not usually studied with the same instruments as climate policy. Whereas sustainability indices are based on historical data and learn from past experiences, the studies of climate policy costs are often based on scenario analyses performed within climate-economy models that project the economy to the medium-term future.

The study illustrated in this Policy Brief (Carraro, Lanzi and Parrado, 2010) uses the FEEM Sustainability Index (FEEM SI) to bridge these two approaches, combining scenario analysis with the study of Sustainability. The FEEM SI is an ideal instrument for this task as it combines information on economic, social and environmental fields, considering synergies and counterbalancing effects. Its main characteristic is that it is built within a dynamic Computable General Equilibrium (CGE) model, which allows projecting sustainability indicators in the future. Thanks to this framework, it is possible to summarize current and future sustainability performances for 40 countries and regions up to the year 2020, also relative to the different policy choices they may undertake.

The effect of a stringent climate policy on Sustainability is not straightforward. Although the environmental component is bound to improve, climate policy will also request resources that will negatively impact on its social and economic components. Furthermore, it is likely that investments will be drawn from socially relevant sectors such as education and health, thereby having a negative impact on society in general. The study contributes to understanding the trade-off among these different aspects, and to assessing the overall

effects of climate policy. It also illustrates how implementing climate policy together with policies aimed at recovering social welfare can lead to an improvement in overall Sustainability.

Climate policy scenarios

Following the pledges submitted by a set of leading regions, four scenarios are analyzed taking into account different grades of commitment and participation (Table 1). In all the scenarios, the countries with a pledge access an Emissions Trading System (ETS) for CO2 emissions only, since CO2 is the main GHG. All climate policies start in 2010 and the targets proposed are accomplished gradually within 2020. The reductions comprise efforts from all sectors in the economy.

1. **Minimum Unilateral Targets (MUT):** Resumes the single and autonomous efforts made by a set of leading regions in the climate policy sphere, since these are the minimum efforts proposed without requiring any coordinated effort.
2. **Concurred Effort Commitment (CEC):** The possibility of a coordinated action among leading regions with higher abatement targets is depicted in this scenario in which most regions from the first scenario formulate more ambitious targets.
3. **Global Commitment (GC):** All countries in the world reach a commitment to reduce CO2 emissions. Countries sign up for a global ETS and agree to limit the growth of global emissions to 19 % with respect to 1990. The group of leading regions set the more ambitious targets from the second scenario while the rest of the countries agree to reduce emissions in 2020 by 30% with respect to a business as usual baseline.
4. **Global Sustainability (GS):** A revenue recycling process is added to the previous scenario. Part of the revenues obtained from the sales of emissions quotas are reinvested domestically, and partly as a transfer from industrialised countries to the rest of the world. These resources are invested to foster research and development, improve education, and meet health expenditures.

Table 1. CO2 emissions targets in 2020 with respect to 1990

Region	Baseline Growth %	Target wrt 1990 (%)		
		MUT	CEC	GC/GS
Annex I - ETS - Leading Regions				
Australia	99	13	1	-11
Canada	66	3	3	3
European Union	26	-20	-30	-30
Japan	17	-25	-25	-25
New Zealand	132	-10	-20	-20
Norway Iceland, RoW ^a	99	66	55	27
Russia	11	-15	-25	-25
USA	55	-3	-3	-3
Non-Annex I - ETS - Leading Regions				
Brazil	209	97	89	89
China	319	157	135	135
India	157	157	157	80
Indonesia	513	354	262	262
Mexico	74	22	22	22
Rest of Asia ^a	146	116	116	72
South Africa	90	-16	-16	-16
Annex I ETS	37	-12	-17	-17
Non-Annex I ETS	250	137	122	106
Rest of the World	109	-	-	46
WORLD	93	-	-	19

a) Norway and Iceland are part of NIR macro region and the Republic of Korea is part of the Rest of Asia macro region. Their targets have been considered accordingly.

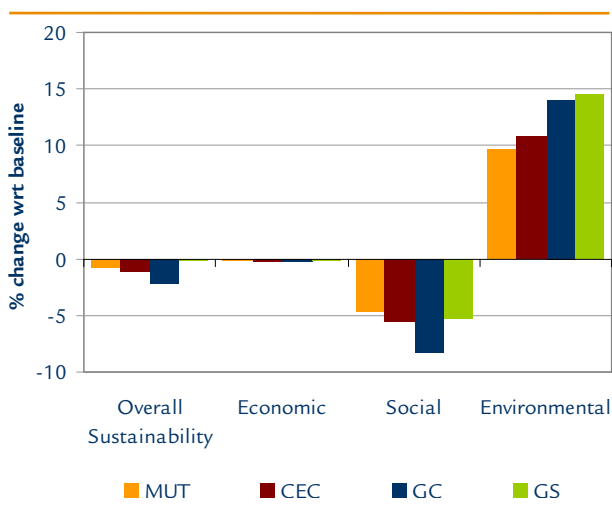
A Baseline scenario, which assumes an intermediate economic growth and no policy to reduce global warming or to improve the social status of countries, constitutes the reference point to evaluate the proposed scenarios.

Sustainability and global climate policy

The expected outcome of a climate policy is without doubt the improvement of the environmental component of Sustainability, but it comes at the expense of economic growth as an indirect cost as analyzed in the climate policy cost literature. Nevertheless, there is an additional social cost which has been so far overlooked (Figure 1). Most of the negative effects are concentrated in the social sphere rather than in the economic one. Besides, the strong increase in the environmental pillar does

not offset the decrease in the social one, leading to an overall decrease of Sustainability. This effect can be observed in the scenarios that do not contemplate a policy with an additional social twist. The main reason is that the efforts necessary to curb GHG emissions reduce investments in other sectors. These effects would be more pronounced when the climate targets are more stringent and are likely to be particularly relevant in developing countries.

Figure 1. World sustainability (% change in FEEM SI in 2020)

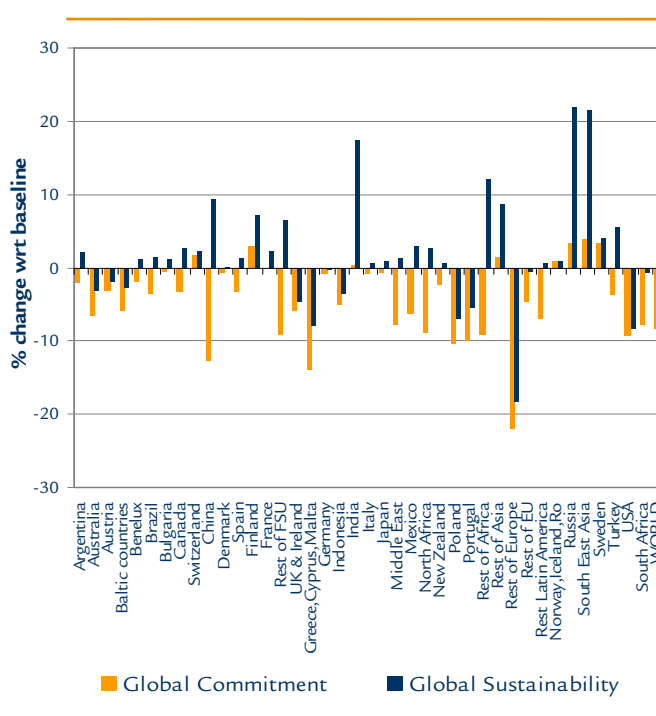


Improvements of social sustainability as an incentive to reduce GHG emissions

Looking at the Global Sustainability (GS) scenario, which considers a revenue recycling process to foster the social and development sectors, a clear difference is noticeable. With social policies implemented at the same time as the climate ones, the results greatly improve. When efforts are undertaken to reduce the negative impact on social sustainability, overall sustainability remains almost unchanged with respect to the baseline case (Figure 1). This could constitute a valuable argument for future negotiations as long as development linked to social issues is included in the climate policy agenda. Moreover, this kind of analysis may help to identify more adequate incentives for a global agreement to reduce future climate change and to mainstream climate concerns in developing countries' economic policies.

As the main concern is making sure that social sustainability is not reduced, especially in developing countries, it is important to focus on the effect of climate policy on the social component of the index (Figure 2). Comparing the outcome relative to the last two scenarios, it is clear that the social pillar is greatly improved in the Global Sustainability scenario. When additional financial resources generated by revenue recycling are invested in education, health or research and development, social sustainability improves, and only a few developed regions are left with a lower deterioration of this component.

Figure 2. Percentage changes in FEEM SI social sustainability in 2020



Towards a real Sustainable Development challenge

A global climate policy will more likely lead to an overall improvement in Sustainability if it is implemented together with policies aimed at improving social and economic welfare. Furthermore, if revenues related to emission abatement are invested in sectors related to the achievement of the Millennium Development Goals, strong improvements in social sustainability could be obtained. Until now, in the policy debate, concerns have usually regarded the negative effects of climate policy on

economic growth and competitiveness. However, the social component of sustainability is likely to be most negatively affected.

Contrary to intuition, as this analysis shows, a global agreement to reduce GHG emissions would result in an overall slightly negative effect on sustainability. Although the environment would be greatly improved, the shift in resources needed to meet the costs of the climate policy would adversely affect social sustainability while economic costs would be contained. The implementation of climate policy may indeed divert resources from the sectors that increase social and economic wealth. This effect is more pronounced when climate targets are demanding and involve developing countries, as their social costs are even greater. Therefore future policies aiming at a Sustainable Development, while decoupling growth of the economy from its carbon emissions should also consider its social components, especially in developing countries.

Reductions in GHG emissions are not sufficient to improve world sustainability, unless an adequate balance between the economic, social, and environmental outcomes is maintained. Ideas and strategies for the achievement of these objectives are at hand, but the right incentive scheme still needs to be designed and implemented. These results underline the need to consider the social impacts of climate policy in the upcoming negotiations. Policy proposals that consider compensation schemes for countries with high social vulnerabilities would encourage the participation of developing countries in a decisive agreement to reduce GHG emissions.

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