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Burden sharing in the implementation of the Climate Convention

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HIGHLIGHTS

- Implementation of the Kyoto Protocol did not reduce global GHG emissions growth.
- Defining burden sharing of emissions is key to the success of climate negotiations.
- Accounting for historical emissions involves too many uncertainties.
- Developed countries have already presented pledges to reduce their emissions by 2020.
- Emissions of developing countries became dominant and they must act to reduce them.

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ABSTRACT

Burden sharing in the actions needed to reduce greenhouse gas emissions has proved so far to be the most intractable problem in the implementation of the Climate Convention and the Kyoto Protocol.

We analyzed the contribution of non-Annex I countries to the GHG emissions in the period 1850–2010 to assess their relative contribution to total GHG emissions. In the period 1850–1990 non-Annex I countries represented 44% of the total but this contribution increased in the period 1990–2010 to 56%. If we extrapolate present trends to 2030 they will represent 69% in the period 1990–2030. The "historical responsibility" of Annex I countries is therefore decreasing. If we take 1990 as the starting year in which the Climate Convention recognized clearly that greenhouse gases are interfering dangerously with the climate system, it is evident the need of non-Annex I countries to engage with Annex I countries in the effort to reduce emissions. We present three options for the burden sharing in such effort.

1. Introduction

The United Nations Framework Convention on Climate Change (UNFCCC) commonly referred as Convention on Climate Change was adopted on May 9 1992, at the United Nations Headquarters, in New York, by the Intergovernmental Negotiating Committee (INC) and was opened for signature in June 1992, at the Rio de Janeiro Earth Summit (UNFCCC, 1992). It was signed by Heads of State and other senior representatives from 154 countries (and the European Community) and entered into force on March 21 1994.

A number of commitments were adopted in the Convention binding "all Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances" (Article 4 of the Convention) to achieve "stabilization of greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the climate system" (Article 2 of the Convention). Therefore, after 1990, no country could argue ignorance of the adverse effects of greenhouse gases increased concentration in the atmosphere.[1]

Developed countries (listed in the Annex I of the Convention) were committed to take actions "with the aim of returning individually or jointly to their 1990 levels these anthropogenic emissions of carbon dioxide and other greenhouse gas" as well as "taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the Convention" (Article 4 of the Convention).

The Convention determined also that the burden of actions and assistance to developing country Parties should fall in developed countries. The rationale for these decisions is stated in the third paragraph of the Convention's preamble which took note "that the largest share of historical and current global emissions of

[1] The environmental legislation of Hessen State, Germany, explicitly states that for conventional contaminated areas the responsibility for remediation is void if the polluter ignored the existence of impacts due the contamination originated by his actions.

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greenhouse gases has originated in the developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs".

This is the only place in the Convention where mention is made to the notion of "historical emissions" which was largely used by developing countries, particularly Brazil and China, to avoid taking actions to reduce their emissions or to reduce the growth rate of such emissions.

According to Godard (2012), the "historical responsibility" concept has "been developed in a scientifically uncertain context deprived of any straight causal relationships between identifiable events and activities". Moreover, responsibility attributed to Annex I countries before 1990 has a very shaky legal foundation because, since antiquity, one cannot punish anyone before the nature of the violation is clearly established (Muller et al., 2007). Furthermore, climate change must be a concern of every individual and charging past responsibilities will not change current facts and challenges.

In 1997, the Convention strengthened the 1992 somewhat vague commitments through the Kyoto Protocol, which established quantitative levels of reduction of at least 5% below the 1990 level, between 2008 and 2012, for the countries listed in Annex I[2] of the Convention (developed countries and economies in transaction). Non-Annex I[3] countries (developing countries) were exempted from any mandatory reductions.

The differential treatment dedicated to developing countries was crucial to US non-ratification of Kyoto Protocol.

In July 1997, The United States Senate passed unanimously with a vote of 95–0 the Byrd–Hagel Resolution which determines that the country "should not be a signatory to any protocol to, or other agreement regarding, the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto in December 1997, or thereafter, which would – (A) mandate new commitments to limit or reduce greenhouse gas emissions for the Annex I Parties, unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for Developing Country Parties within the same compliance period" (US Senate, 1997).

The original draft Article 10, introduced in the negotiation process of Kyoto Protocol, was intended to provide for voluntary commitments by non-Annex I Parties, which would have been a conciliatory way to encourage USA government to ratify the Protocol. However, after days of debate on the subject with no agreement achieved, the Chairman of the Committee of the Whole, Ambassador Raúl Estrada-Oyuela, closed the debate and gaveled out the deletion of Article 10 (Jefferson, 1998). The deletion of Kyoto Protocol's original Article 10 might have been a missed opportunity. As it turned out, the partial implementation of the Protocol was not able to reduce the growth of global GHG emissions. In 1990, the concentration of CO_2 in the atmosphere was 354 ppm which increased to 399 ppm in 2014, an annual growth of 0.54% (Tans and Keeling, 2015) despite the efforts of the European Union countries which all together represent less than 15% of the global emissions.

For this reason it is of fundamental importance to revisit the whole question of burden sharing in order to achieve a real reduction of greenhouse gas emissions.

2. The reasons for the failure of kyoto protocol Targets

One frequently asked question is why the Kyoto Protocol adopted the somewhat capricious reductions emission targets for Annex I countries and exempted developing countries together from emission reduction.

Some of the reasons are:

i. Developing countries were minor emitters in 1990 (12.5 billion tons of CO_2eq) as compared to 18.1 billion tons of CO_2eq in Annex I countries
ii. Carbon intensity reductions ($Ic = C/GDP$)[4] were already occurring in many developing countries, including China (Fig. 1). There was, therefore, the hope that such carbon intensity decline could offset carbon emissions (Reid and Goldemberg, 1997).
iii. The difficulties in achieving agreement among countries with very diverse interests.

A simple pragmatic approach, at that time, was to adopt reductions in factual emissions (in 1990) which were known and quantifiable. To adopt any other criteria considering historical emissions involved many assumptions and very uncertain data, particularly regarding land use changes.

The situation has changed dramatically today:

i. China's emissions in 1990 were 3.4 billion tons of CO_2eq and grew to 10.6 billion tons of CO_2eq in 2011. GDP has grown at an approximate rate of 8–10% per year offsetting carbon intensity reductions of approximately 6% per year between 1990 and 2000 and much lower rates ever since.
ii. No account was made on embodied carbon trading which was not very significant in 1997, but is very important today. In 2005, USA avoided the domestic emissions of 190 $MtCO_2$ by the imports of products manufactured in China. On the other hand, Chinese emissions due this traded goods increased 515 $MtCO_2$. In the same year, the imports, by China, of products manufactured in the USA promoted the reduction of 179 $MtCO_2$ in the country. In total, Chinese–American transactions, in 2005, were responsible for the increase of 385 $MtCO_2$, especially due to the high carbon intensity and low efficiency of Chinese industrial sector and exporting infrastructure (Guo et al., 2010). This is not the case for USA and China only. Other industrialized countries claim great reductions on national GHG emissions but, in fact, a share of its emissions is "leaking" to countries with less stringent regulations. In the case of UK, accounting for embedded emissions would have increased CO_2 emissions by 41.8% for the year 2011, in comparison with UK Greenhouse Gas Inventory (Department of Energy and Climate Change, 2014). Buckner et al. (2010) calculated CO_2 emissions embedded in internationally traded goods and observed that G77 countries consume 23% less CO_2 emissions than domestically produced, while the Organization for Economic Co-operation and Development (OECD) countries consume almost 30% more CO_2 emissions than they produce, importing preferentially from G77. The accounting procedures to embedded emissions can probability meet the definitions of Kyoto Protocol's Article 3, item 10, that refers to the accountability of carbon units acquired or transferred from a Party included in Annex I to other Party.

[2] Annex I Parties include the industrialized countries that were members of the OECD (Organization for Economic Co-operation and Development) in 1992, plus countries with economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States.

[3] Non-Annex I Parties are mostly developing countries.

[4] The growth in emissions is the sum of the decrease in carbon intensity plus the GDP growth rate of the country: $C = C/GDP \times GDP$; $\Delta(C)/C = \Delta(Ic/Ic) + \Delta(GDP)/GDP$.