

Deficiencies of the Nationally Determined Contributions: Risk of Exacerbating Climate Change

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Abstract: This paper examines the effectiveness of NDCs in the Paris Agreement for alleviating climate change and inequality. Incorporating evidence from reviews and journals, this study argues that NDCs effectively solve part of the pre-existing inequality, yet the deficiencies of this mechanism have to be improved to achieve the maximization of its function. More specifically, by evaluating the changes brought by NDCs including independent emission reduction, the improved role of developed country parties, and the repositioned role of developing country parties, the innovations of NDCs mechanism to successfully solve the pre-existing problems in the Kyoto Protocol are clearly recognized and demonstrated. Yet by analyzing the existing deficiencies of NDCs including weak legal binding causing overall low ambition, potential vicious cycle formed, insufficient compliance motivation, and the problem of free riders causing the tragedy of Race to the Bottom, NDCs are shown to be insufficient to effectively address climate change and respond to inequality. Finally, it is worth considering strengthening the participation of non-state actors and enhancing the link between climate change and trade as possible methods to improve the deficiencies of NDCs, and other possible ways of improvement are put forward.

Keywords: Climate Change, Carbon Emission, Paris Agreement, Nationally Determined Contributions, Common but Differentiated Responsibilities

1. Introduction

At the United Nations Ocean Conference in June 2022, the impact of climate change on the oceans, including warming seawater, coral death, sea level rise, and ocean acidification, was highlighted again. The increasing severity of climate change brought countless natural disasters, but also social inequality due to countries' differences in levels of socioeconomic development and resistance to climate impacts [1].

To combat the climate crisis, United Nations Framework Convention on Climate Change (UNFCCC) was established in 1992 and Kyoto Protocol was signed in 1997. The latest valid agreement is the Paris Agreement negotiated at the 2015 United Nations Climate Change Conference[2]. It superseded the UNFCCC and Kyoto Protocol and marks the third milestone in the history of international law in climate change through the new mechanism named Nationally Determined Contributions (NDCs). As the heart of the Paris Agreement, NDCs brought a lot of innovations to tackle climate change. However, the real ability of NDCs to alleviate climate change is controversial. Therefore, this paper will discuss the effectiveness of the NDCs mechanism by

analyzing and comparing both the changes brought and deficiencies of NDCs.

1.1. Meaning of NDCs

NDCs are the parties' climate action plan in the Paris Agreement. It is one of the approaches suggested in the Paris Agreement to solve the existing inequality brought by climate change. NDCs contain information on targets, policies, and measures of each party for reducing emissions and adaptation to climate change. It also covers information on the needs for and the provision of finance, technologies, and capacity building. Every party in the Paris Agreement is required to establish NDCs and update it every five years starting from 2015. Each updating round should ratchet up ambition through more aggressive emission reduction cuts or other ideal forms. The effectiveness of NDCs is supported and ensured through the ex-ante review, global stocktake, and enhanced transparency framework.

1.2. Background of NDCs — from UNFCCC to Kyoto Protocol to the Paris Agreement

UNFCCC is the first international treaty for the world to jointly deal with carbon emissions and climate change. For the first time, the issue of global cooperation to deal with climate change was determined, and the legal framework and emission reduction targets were put forward. However, UNFCCC is still a rough legal document, which is reflected in its failure to clarify the emission reduction tasks of various countries, as well as the financial and technical support between countries.

The Kyoto Protocol can be considered the second stage of development in the history of international law in the area of climate change. The main changes compared to UNFCCC are clearly shown through two aspects.

- It clearly stipulates the emission reduction obligations of developed countries. The legal mechanism for developed countries to provide financial and technical assistance to developing country parties is well established.
- It provides more flexible means and more detailed rules including: the national annual carbon emissions are calculated by subtracting the carbon dioxide removed by the forest from the actual emissions, and the international alliance can adopt the group approach to coordinate their carbon emissions, etc.

Nevertheless, the inflexible agreement mechanism led to the final collapse of the Kyoto Protocol, as the problem of unbalanced emission reduction task between developed and developing country parties still exists, and because the emission reduction of each commitment period was negotiated at the end of the previous commitment period when the domestic situation of each country has changed dramatically.

The Paris Agreement is the improved solution replacing the Kyoto Protocol which successfully solved the problems of unbalanced emission duty among parties. The Paris Agreement builds upon the Convention while attempting to enhance the fairness of duty and promote the actual implementation by building a unique triple compliance mechanism, including NDCs, Enhanced Transparency Framework (ETF), and Global Stocktake. Aiming to control the rise of global average temperature within 2 °C above the pre-industrialization level as suggested in Article 2, Paris Agreement adhered to the principle of common but differentiated responsibility (CBDR) by bringing all nations, both developed country and developing country parties, to undertake obligations to fight against climate change and adapt to its effects, with enhanced support to assist developing country parties[2].

2. Changes Brought by NDCs

NDCs brought a lot of innovative and reformative changes compared to the Kyoto Protocol, including independent emission reduction, the improved role of developed country parties, and the re-positioned role of developing country parties, which effectively solves part of the existing inequality.

2.1. Mandatory Emission Reduction Turns to Independent Emission Reduction

Paris Agreement identifies that no major force can be required with mandatory emission reductions, instead, it brings countries' pledges into an international system of climate accountability and the voluntary self-determined ratchet mechanism, offering an opportunity for a more durable international cooperation. NDCs break through the previous top-down performance method centered on legal documents and changes to bottom-up performance, which promotes the self-determined contributions of each party according to their national situation and the long-term implementation of the treaty.

2.2. Principle of CBDR

Through the principle of CBDR, NDCs reduce the level of existing inequality aroused by the burden-sharing of climate change between different parties and ensures the fairness of the Paris agreement, as shown notably by the amended responsibilities of developing country parties.

As stated in Article 4(4) of Paris Agreement, developed country Parties should continue to take the leading role by undertaking ambitious emission reduction. Developed country Parties are also expected to help developing country parties in continuation to fulfill their obligations by providing financial resources to support their capacity building, mitigation, and adaptation.

Notably, the Paris Agreement brought the obligations of climate change to developing country parties for the first time while still retaining a degree of differentiation. Developing country parties whose emissions rise with economic growth can no longer hide behind their titles and are expected to make a contribution proportionate to their degree of development. As stated in Article 4, developing country parties should continue to enhance their mitigation efforts while moving toward economy-wide emission reduction or limitation targets with respect to one's national circumstances.

The Paris Agreement has made a more detailed division of emission reduction subjects based on the division mentioned in UNFCCC, including guidance for the action and provision of support towards the countries who are especially vulnerable to the negative impacts of climate change, such as the least developed countries and small island developing states. In the Paris Agreement, the 1.5°C temperature target was put forward as the direction of efforts as a balance which took care of the red line of small island states and least developed countries, and also provided the possibility to explore more effective emission reduction methods in the future[2].

3. Deficiencies of NDCs

The NDCs were originally intended to help mobilize further long-term action by all parties to mitigate the inequalities brought about by climate change through the principle of CBDR. However, judging from the current data, the innovation brought by NDCs has indeed slowed down inequality to a certain extent, but its deficiencies appeared in the implementation process causing its impact to run counter to the original vision with a risk of deepening inequality and worsening global warming.

3.1. Weak Legal Binding Causing Overall Low Ambition

The implementation of the NDCs is treaty soft law, as while the obligation to submit NDC is a binding obligation within a treaty, parties merely resolve to reflect a progression to its highest possible ambition or aim to reach global peaking of greenhouse gas emissions through NDCs. As a double-edged sword, legal bindingness may provide greater assurance of compliance. However, NDCs seem to go on the contrary. The imbalance between the autonomy of parties and emission reduction, with the autonomy of parties, overruling the intensity of emission reduction, was clearly shown by the emission gap appeared and the gradual decrease in the autonomy of emission reduction.

The latest synthesis report from the UNFCCC shows a critical and urgent problem — the emission gap. The combined emissions would be just 0.5% lower in 2030 than in 2010, far off the 45% reduction required to keep warming below 1.5°C and a 25% reduction required to stay below 2 degrees. Even with all new pledges for 2030, the GHG emissions will be roughly twice as much in 2030 as required for 1.5°C. Moreover, the Emissions Gap Report 2021 shows that new national climate pledges combined with other mitigation measures put the world on track for a global temperature rise of 2.7°C by the end of the century. The huge emission gap now will lead to the failure to achieve the 2-degree goal. The massive number of conditional targets can be also considered a form of low ambition since the actual efforts and contributions of the conditional targets are uncertain and unwarrantable [3].

Particularly, we can see low ambitious NDCs among a lot of developed countries as shown in Figure 1, which reveals a threat to the global climate society. Despite some countries had indeed ratcheted up their ambition to a relatively high level, there remains another substantial gap between what governments have promised to do and the total level of actions they have actually undertaken to date[4].

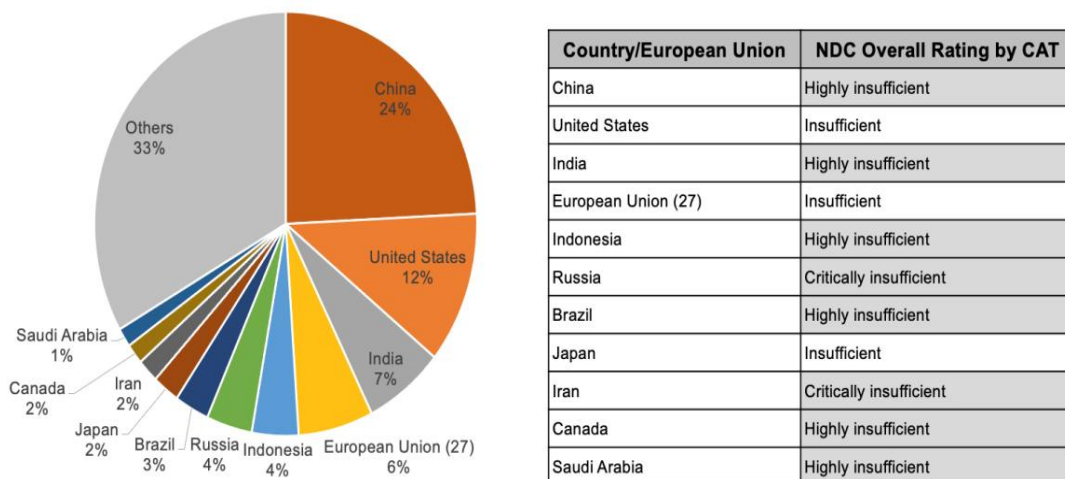


Figure 1: Top Emitters and European Union in 2019 (Data from Climate Watch)

3.2. Insufficient Compliance Motivation

Due to the characteristics of NDCs soft law, there is no corresponding reward after compliance, and there is no corresponding punishment for non-compliance, resulting in insufficient motivation for each party to comply with the law.

This can be seen by the fact that developed countries fall short in climate finance. All parties in the Paris Agreement are expected to cut their emissions, but for developing country parties to achieve their aims, it depends on developed country parties achieving their commitment of

providing \$100 billion in climate finance, while utilizing half of this amount to adaptation would help close significant financing shortfalls for crucial measures. Therefore, financing climate action is crucial for many NDCs. Regrettably, the data from Organization for Economic Co-operation and Development shows that the developed countries remain \$ 20 billion short of meeting the 2020 goal of mobilizing \$ 100 billion. Based on a working paper from Overseas Development Institute, only Norway, Sweden, and Germany have been paying their fair share of the annual \$100 billion goals in 2017-2018 while all other countries are falling short[5]. From this we can see that without incentives and punishments, the parties began to fail to abide by their commitments, backfiring the purpose of the Paris Agreement’s use of “soft law” in the first place.

3.3. Potential Vicious Cycle Further Exacerbates Inequality and Worsens Climate Condition

The problem of the flexibility of NDCs had been a very controversial and contradictory matter since without any mandatory regulations could avoid the rebound of parties, but can and has led to insufficient NDCs commitments, as analyzed in 3.1.

The insufficient NDCs will create a negative vicious cycle that will run counter to the objectives of the Paris Agreement, as illustrated in Figure 2. Firstly, insufficient NDCs will and is accelerating climate change in the first place, due to the lack of ambition in NDCs of developed country parties in terms of emission cut, and failure to achieve proposed climate finance. Secondly, the accelerated climate change will worsen the inequality by enlarging the gap between countries, as climate change does not affect country equality. The larger inequality will once again lead to a higher degree of insufficient in NDCs, thus forming a vicious circle that will eventually harm the global climate society. According to new research from Stanford University, the gap in the economic output between the world’s richest and poorest countries is 25 percent larger today than it would have been without global warming. This clearly shows that this vicious cycle is starting to form[6].

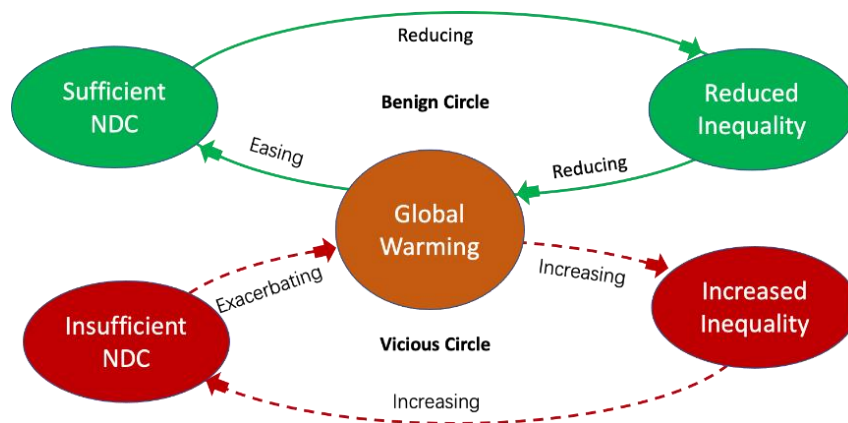


Figure 2: Benign / Vicious Circle about NDC and Global Warming.

3.4. Free Riders in International Climate Society Causing the Tragedy of Race to the Bottom

Despite the principle of CBDR, free riders in international climate society still exist. Climate change effort is a non-rival and non-excludable public good, which means that it is impossible to exclude a non-compliant country from enjoying the benefits of another nation’s contribution, nor can the country fully enjoy all of the benefits they created. In other words, if Country A implements a severe policy to tackle climate change, Country A will bear one hundred percent of the cost of the policy but will only get part of the benefits in return, while the remaining bulk of benefits with leaks to the pocket of other countries. As a consequence, even if country A had reduced a significant amount of emission, the total amount globally will be unchanged if Country B raises its emission by

the same amount. Gradually, what economists call the “race to the bottom” to happen in the context of climate change, by which individual countries will continue their self-interest by sacrificing climate conditions to promote their own prosperity[7].

In this way, the public goods attributes of the climate system had made collective action to be unsuccessful in large groups where actors’ impact on the final outcome is slight and everybody acts in self-interest. In the end, the collective action will be undermined, the common principle will be weakened, and the world will grow hotter to the detriment of everyone.

4. Improvements

To solve the inequality caused by the above deficiencies of NDCs and make the mechanism of NDCs work better, we first need to prevent and break the vicious cycle by targeting the weaknesses of soft law, and on this basis, by solving the free-rider problem, and finally by making NDCs become “best effort guarantee” from “best effort” through enhanced compliance and cooperation.

4.1. Starting a Positive Cycle of NDCs Mechanism

Firstly, it is crucial to start by promoting the rational choice of the country. In order to eliminate the problem of free riders and to enhance the national ambition, the first step is to transform the concept of individuals, companies, and countries from self-awareness to community awareness. Only when all parties as well as citizens are fully aware of climate change as an urgent transactional problem, international agreement and NDCs mechanisms can really start working effectively.

Secondly, the fairness of obligation of each party can ideally be defined and quantified in a rigorous, transparent, and scientific way. We could formulate a "recommended fair share", and all countries should seriously consider accepting the fair share in global efforts. The operation of fair and equitable shares must focus on the current substantial capabilities of parties in various perspectives, as well as considering the historical responsibilities, which directly correspond to the principle of CBDR-RC in the UNFCCC.

Thirdly, ensuring the actual implementation of each party in accordance with their NDCs, as well as developed countries’ commitment in terms of climate finance toward developing country parties. This is crucial for starting a positive, healthy circle to prevent further climate change, as figure 2 illustrated.

4.2. Strengthening the Participation of Non-state Actors

At the UN Climate Change Conference in Glasgow, Treasury Secretary Janet Yellen called for a “whole sale transformation” of carbon intensive economies. Indeed, to tackle climate change, we need a wholesale transformation of the economies and societies including energy, agriculture, transport, and all other sectors. NDCs are a government obligation under the Paris Agreement, but for NDCs to work well, they need to be widely understood and performed by non-state actors including businesses, civil society, academia, and ordinary citizens. Everyone will need to make changes to reduce emissions and adapt to climate consequences. In this regard, by imposing corresponding limits, regulations, and emission reduction obligations on domestic companies and multinational companies through financial sector legislation, non-state actors can take greater responsibility to reduce emissions and thus meet the national goal of NDC. In addition, by supporting companies who take steps to protect the environment and climate, the company will be encouraged to attach importance to environmental protection projects, energy conservation, and emission reduction.

4.3. Enhancing the Link Between Climate Change and Trade

It is also worth considering strengthening the coordination of regional organizations and the relationship between climate warming and trade, to increase the country's total emission reduction through a collaborative model. By imposing retaliatory trade tariffs as a threat of non-compliance and reducing trade barriers as a strong incentive to participate, we can create a powerful self-punishing compliance mechanism. Making the responsibility for climate change which seems to have no real interests, related to the status and reputation of the country in trade which has real interests, so that the country's non-compliance will have a substantial economic impact. For example, similar to the carbon trade area under consideration by the European Union, countries that have fulfilled their responsibilities in NDCs and ratchet up their ambition can establish a free trade area with the same countries, while imposing additional tariffs on those that did not.

5. Conclusion

The mechanism of NDCs is a decent start in addressing climate change and the concurrent issue of inequality, yet it is still not working well enough to make the goals of the Paris Agreement within reach. The deficiencies that existed in this mechanism need urgent refinement and more aggressive international cooperation should be carried out in order to solve the problem of low ambition, insufficient compliance motivation, free rider, etc, and to effectively address climate change — the tough and ultimate issue in human history. We have a very limited time to act before the irreversible point, but it is not late for us to start now.

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