Climate Change and Development: Implications of the US–China Joint Announcement on Climate Change

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Climate change has become one of the key issues in development today, in its own right and as part of the larger question of the environment and development. The articulation of a progressive (in both scientific and political terms) global and domestic climate policy is a major challenge before the world today. That the threat of global warming is of critical relevance to agriculture and food security in particular, and the fabric of rural society in general, is, of course, well-accepted. But the global and domestic policy response to this threat — in terms of coping or adaptation, and in terms of curbing greenhouse gas emissions to limit the rise in global temperatures to less than 2°C — is of as much significance to the future of agriculture as it is to industry.

In 2014, the two most significant events in global climate negotiations were the annual Conference of Parties (COP 20) of the United Nations Framework Convention on Climate Change (UNFCCC), which concluded in Lima, Peru, on December 12, and the joint statement by President Barack Obama of the United States and President Xi Jinping of the People's Republic of China during the former's visit to Beijing in November.

The statement included two specific announcements by the United States and China on the reduction of greenhouse gas emissions.[1] First, the United States offered to reduce its annual emissions by 26 to 28 per cent below 2005 levels by 2025, promising "to make best efforts to reduce its emissions by 28 per cent." China, for its part, declared that it intends "to achieve the peaking of CO_2 emissions around 2030 and to make best efforts to peak early and intends to increase the share of non-fossil fuels

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[1] The full text of the statement is available at http://www.whitehouse.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change.

in primary energy consumption to around 20 per cent by 2030." Both countries also promised to attempt to increase the quantum of reductions over time.[2]

The term "peaking" refers to the point when the annual greenhouse gas emissions reach their maximum. China's offer, therefore, amounted to a promise that its greenhouse gas emissions would decrease after 2030.

The extent to which the announcement of these targets amounts to a firm commitment is, in the case of the United States, open to considerable doubt. Republican Party leaders in the United States Senate promptly declared that they would block any attempt by President Obama to implement the reductions. Given the majority that the Republican Party has in the US Senate and in the House of Representatives, the die-hard opposition to any climate change action from influential Republican leaders, and their past track record, this threat will, in all likelihood, be carried out.[3] In the case of China, however, there is no evidence that it will go back on its offer by delaying or halting the implementation of its announcement (although in the absence of reciprocal action by the United States, it is certainly open to China to do so).

The significance of the joint statement by President Obama and President Xi and of the specific climate mitigation targets set by the United States and China for the post-2020 period is not, however, to be underestimated. Such a joint declaration has long been anticipated as one of the possible ways in which an impetus can be given to the process of arriving at a credible global agreement. The two Presidents have emphasised this fact in their joint statement, a statement that has undoubtedly taken some effort to achieve.

It is something of a truism that the United States and China are, in many ways, the two nations whose climate policies and actions carry the most weight in the developed and developing country camps. Even more significantly, perhaps, each of these two nations is perceived by the other to be the critical factor in global climate policymaking. It has long been a cherished goal of US climate policy to get China, and to a lesser extent India, to commit to long-term goals in greenhouse gas (GHG) emissions reduction. This goal commands a bipartisan consensus in domestic climate policy debate in the United States, and was the stated reason why the United States Senate voted unanimously not to ratify the Kyoto Protocol despite the Clinton administration's willingness to accede to it.

China has always claimed to be a developing country under the terms of the UNFCCC. It has stoutly upheld the principle of common but differentiated responsibilities, while also arguing that developed countries must take the lead in

[2] Adopting the jargon current in climate change negotiations, the actual text reads, "Both sides intend to continue to work to increase ambition over time."
[3] The election of a Democrat as President of the United States, two years hence, may of course make some difference.

reducing greenhouse gas emissions. When it comes to considerations of sharing the climate change mitigation burden, China has resisted being labelled anything other than a "developing" country. The developed countries, however, have targeted China, especially after the Copenhagen Climate Change Conference in 2009, pointing to its impressive record of economic growth and arguing that changing economic realities rendered the previous classification obsolete.

At the same time, there are indications that China's current climate policy stance is, in part, only a means to gain time in order eventually to assume a greater leadership role. For instance, China has introduced carbon trading as a means of restricting carbon emissions, with seven regional pilot schemes currently functioning and a national carbon market scheme scheduled to begin in 2016 (Hope 2014). When in place, the national carbon market will surely be one of the biggest carbon markets in the world. Chinese scholars have begun extensive research work related to low-carbon and green growth and have also made other substantial investments in research capabilities in areas related to climate and sustainable development.[4] Outside the present negotiations, then, China appears to have positioned itself on the climate issue as a developed rather than a developing country.

China has also taken strong action by enforcing domestic targets on energy efficiency, with goal-obsessed regional government officials resorting on occasion to power outages in order to keep meeting energy efficiency targets.[5] Thus, although sections of the media in developed nations raise issues of monitoring China's commitments, and suggest that China will not be transparent on the issue of meeting goals, China's promises in the Joint Announcement can at present be rated as being more credible than those made by the United States.

The main significance of the Joint Announcement lies in the willingness of these two nations to sit down and arrive at a joint statement that spells out specific details of the future mitigation commitments of each. While reciprocity is not spelt out, it is nevertheless present in an implicit fashion. Bilateral announcements on climate issues have previously been made before and after high-level US–China meetings, but this is the first that has broached the subject of mitigation commitments in such explicit fashion.

Although the announcement is a welcome and positive sign in the global climate discourse, the proceedings in Lima at the COP 20 have tempered any expectations that such bilateral announcements will yield immediate tangible benefits at the global level. The US–China Joint Announcement has hardly led to any variation in the predictable trajectory of confrontation and wrangling that has come to mark these meetings, with some results or agreements being extracted only at the last

[4] See, for instance, Pan, Ma, and Zhang (2011), and references therein.
[5] For a brief report on this, see, for instance, Duanduan and Jie (2011).

minute. Nor has the US or China made any effort to promote the announcement as signalling a way forward in the negotiations.

However, a more important reckoning will undoubtedly be in Paris in December 2015, at the 21st edition of the Conference of Parties (COP 21) of the UNFCCC. It is possible that the mood then will be set not by the example of the acrimony that marked the Copenhagen negotiations in 2009, but by the example of the US–China Joint Announcement.

Reducing Emissions: Sharing the Burden

The significance of the Joint Announcement cannot be determined by politics alone: it must also be judged by the effectiveness, in environmental terms, of the offers made within it. How effective will these targets be in achieving the global goal of restricting temperature increase to below 2°C?

The United States has promised a reduction that amounts to a 13.8 per cent reduction below the level of its greenhouse gas emissions in 1990.[6] The European Union, on the other hand, has already offered to reduce its emissions below 2005 levels by 35 per cent by 2030. Relative to the level of emissions in 1990, this amounts to a reduction of 40 per cent by 2030, though there is some doubt whether these targets can be met in the absence of strong mitigation by other major emitters among developed and developing nations. The European Union target is in fact a reduction of approximately 20 per cent below 1990 levels, with the possibility of reducing emissions further to 30 per cent in favourable circumstances in the negotiations. The Intergovernmental Panel on Climate Change (IPCC) had indicated in its Fourth Assessment Report in 2007 that developed countries should reduce their emissions by 25 to 40 per cent below 1990 levels by 2020 and by 80 to 95 per cent below 1990 levels by 2050.[7] In the light of these numbers, it is clear that the United States (and even the European Union) is doing less than its share. If this is so, the obvious corollary is that developing countries will have to do considerably more than their due share of bearing the burden of emissions reduction.

In the case of China, it is harder to evaluate the environmental effectiveness of the announced target. The offer of a peaking year must be read with the announcement that China also plans to ensure that the share of renewable energy in its primary energy consumption will go up to 20 per cent by 2030. But the significance to global mitigation of China's goal of achieving a peak in its emissions by 2030 depends very much on the parameters by which the share of the overall mitigation burden to be borne by China will be measured. It is obvious, for instance, that this goal may

[6] 1990 is conventionally taken as the base year for measuring reductions in emissions, since it marks the year when, roughly speaking, serious efforts to deal with global warming began.

[7] See Box 13.7 in Section 13.3.3.3 of the Fourth Assessment Report of the IPCC (IPCC 2007).

be achieved by a rapid rise in emissions till 2030 through the increased use of coal alongside more renewable energy, with a subsequent long and slow decline. On the other hand, China's emissions may equally well, hypothetically, rise only slowly till 2030, while it declines more rapidly after. China's offer encompasses equally well both these extreme scenarios.

In reality, however, greenhouse gas emissions grow only as a consequence of increased economic activity, and there are undoubtedly limits to how rapidly an economy can expand. The current global economic situation will obviously be a further dampener on any possible path of rapid growth. China's current rate of annual growth in greenhouse gas emissions is of the order of 5 per cent, while its ratio of emissions to Gross National Product is declining steadily. So while it appears that China still has considerable room for manoeuvre, that is a reading difficult to quantify.

Carbon Budgeting

It is clear that any judgement of China's intentions (and those of the United States) requires an objective measure of whether they are commensurate with what the world requires to keep global warming to 2℃ or below. A simple and useful indicator is provided by the notion of a carbon budget associated with a specific range of increase in global temperature.[8] A global carbon budget is the cumulative amount of carbon dioxide (other greenhouse gases may be included, by extension) that may be emitted by the world as a whole, starting from the pre-industrial era, such that at no point will the global temperature rise beyond a specified temperature. If we take away what has already been emitted, we obtain the available carbon budget for the future. This is the total amount of cumulative emissions that the world is allowed. Table 1 indicates the global carbon budget associated with some specific increases in temperature. Associated to these budgets is also the probability of whether, with this budget, the threshold of 2℃ will be crossed. Such probabilities are a consequence of the uncertainties associated with our understanding of the Earth's climate.

Since the globally accepted goal is that of limiting increases to 2℃ above pre-industrial levels, it is clear that the world has a cumulative carbon budget of approximately 270 gigatonnes of carbon for the future. An associated and useful scientific fact is that, for a given carbon budget, the rate at which the budget is utilised and other particular details such as the rate of increase or decrease in annual emissions and the time period when the annual emissions reach a maximum do not determine the extent of warming. Such details are only of economic significance.

[8] The inclusion of considerations relating to the carbon budget is one of the major new features of the Fifth Assessment Report of the IPCC and constitutes a major conceptual advance, both in scientific and political terms (IPCC 2013).

Table 1 *Specific global carbon budgets and associated range of increase in temperature, and the probability of the 2℃ threshold being crossed, with associated confidence levels*

Budget between 2012-2100 (GtC)	Increase of global mean surface temperatures (by 2100)	The probability of exceeding 2℃	
		Degree of Confidence	In per cent
270	0.3℃ to 1.7℃	Unlikely to exceed 2℃ (medium confidence)	<33
780	1.1℃ to 2.6℃	More likely than not to exceed 2℃ (high confidence)	>50
1060	1.4℃ to 3.1℃	Likely to exceed 2℃ (high confidence)	>66
1685	2.6℃ to 4.8℃	Likely to exceed 2℃ (high confidence)	>66

Source: IPCC, 2013.

The carbon budget has to be shared equitably between all countries. Two considerations determine the share of the budget available to individual nations. The first is fairness, that is, there must be a method of determining the fair share of individual nations. A number of suggestions have been made in this regard.[9] The second, often ignored, is that this fair share will not in fact be available to most developing countries. This is a consequence of the fact that by any measure of a fair share, the developed countries have, historically, emitted far more than their due. It is therefore important to estimate the portion of the carbon budget that is available to individual countries, taking into account the behaviour of other nations, especially the developed nations.[10] For India, for instance, the amount of available cumulative emissions, taking into account both the considerations mentioned above, ranges between 36 and 55 gigatonnes of carbon. For China, the corresponding figures range between 51 and 82 gigatonnes of carbon.[11]

China, therefore, appears to have taken a route where its long-term cumulative emissions are left unfixed for now. By declaring a peaking year, it has certainly placed some constraints on itself, but in leaving its overall long-term budget unspecified, China has provided itself room for manoeuvre. Unfortunately, the combination of the unilateral weak mitigation effort that the United States proposes for itself and the unfixed carbon budget for China suggests that the cumulative emissions for other developing countries and regions, notably for India and Africa as a whole (with the exception of South Africa), will be considerably less than their fair share of the global carbon budget. This may be expected to seriously constrain their industrial

[9] For a review of three different approaches, see the BASIC (Brazil, South Africa, India and China) expert group report in Winkler *et al.* 2012. Other variants on the theme have appeared later, as in Raupach *et al.* 2014.
[10] This issue has been studied in detail in Kanitkar *et al.* (2012) and Jayaraman *et al.* (2013).
[11] These figures have been estimated in Chatterji (2014), using techniques from Kanitkar *op. cit.* and using the values for the global carbon budget from the Fifth Assessment Report of the IPCC (IPCC 2013).

futures. If their development strategies are unmindful of the global budget, the route to increasing temperatures beyond 2℃ will be open, with equally harmful consequences.

Despite the clear and widening scientific consensus regarding the utility of the carbon budget perspective, it is significant that the idea has met considerable resistance at the political level, both in developed and developing countries.[12] As a group of climate scientists noted in a comment in the journal *Nature* (Frame, Macey, and Allen 2014), even the Executive Secretary of the UNFCCC, Christiana Figueres, ruled out the possibility of using carbon budgets, despite the scientific wisdom in adopting a carbon budget perspective. She cited political difficulties as the cause. This was a surprising comment, coming from a figure who, as the operational head of a multilateral treaty-based institution, may have been expected to be more neutral in her approach.

India: Climate Policy at the Crossroads

What has the Indian response to this announcement been? Officially, there was no serious response from the Government of India and its spokespersons. Public opinion, too, apart from some editorial comments in a section of the print media, has taken little note. Undoubtedly, the Government will be relieved that the US–China Joint Announcement has had little impact on COP 20 at Lima. However, the larger malaise that this unresponsiveness reveals is the absence of a long-term perspective on climate policy that recognises India's development needs and the potentially serious consequences of unchecked global warming for its population.

By March 2015, India, like other countries, needs to declare its Intended Nationally Determined Contribution (INDC) to a global climate agreement as mandated under the Durban Platform, approved at the climate negotiations in 2011 in Durban, South Africa. This is in preparation for COP 21 at Paris in December 2015. Given this tight schedule, there is little evidence that the Government of India is moving ahead at the pace needed to evaluate the country's options and determine India's stance. The Government has also shown no signs of undertaking a wide-ranging series of public consultations with experts on the subject. Such consultation must surely take place before India articulates a long-term commitment on climate policy. It should be a matter of some concern that India is likely to proceed to Paris next year without any seriously-thought-out policy backed by adequate, democratic consensus. India's non-governmental sector has, in general, contributed to a polarisation of the environment-versus-development debate, and has, as such, been of little help in moving climate policy forward in a positive way.

[12] A notable exception in the case of developed countries is the report of the quasi-official German think tank, German Advisory Council on Climate Change (WBGU), which explored a carbon budget approach. However, predictably, the report took current inequalities in emissions as a given in its calculations of future budgets for individual countries (WBGU 2009).

Globally, a large number of countries, particularly from South Asia, Africa, Central and South America, are even more ill-placed than India to deal with the challenge of articulating a coherent vision of development in the era of global warming. The governments of many of these countries appear to have given in to the temptation of reducing the question of a global climate deal to the issue of the financial assistance that they would receive from developed countries. In doing so, they have also tended uncritically to accept extreme readings of the impact of climate change in the present on sectors such as agriculture, forestry, disaster management, and so on, without adequately appreciating the nuances or uncertainties involved in estimating such impacts. Nor have they been able, by and large, to strike an appropriate balance between environmental and growth concerns in forecasting their economic future. The transformation of agrarian relations in just and equitable directions, as well as the development of agriculture in terms of productivity and sustainability, has an important role to play in realising this balance. If global warming is uncontrolled, such balance will become very difficult indeed to achieve.

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