2012-16 / May 2012

Working papers

FROM RIO TO RIO: A GLOBAL CARBON PRICE SIGNAL TO ESCAPE THE GREAT CLIMATE INCONSISTENCY

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FROM RIO TO RIO: A GLOBAL CARBON PRICE SIGNAL TO ESCAPE THE GREAT CLIMATE INCONSISTENCY[1]

By Stéphane Dion and Éloi Laurent[2]

> "The door is closing. I am very worried – if we don't change direction now on how we use energy, we will end up beyond what scientists tell us is the minimum (for safety). The door will be closed forever."
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> (Fatih Birol, Chief Economist, International Energy Agency, *"International Agency Gives Us Five Years to Deal with Climate Change", The Guardian*, December 28, 2011)

Two decades after the 1992 Rio Conference, we must admit to collective failure in combating human-induced climate change. The problem is not that no efforts have been undertaken, but that these efforts have just not been enough. We cannot escape serious climate disruption – which, to some extent, has already begun – if we keep going down that road. We must change direction, and we must move quickly.

To this end, we call in this paper for a fine-tuning of the international negotiations on climate. We propose refocusing these international efforts on negotiating a global carbon price signal, harmonized in principle but flexible in practice, instead of doggedly spending the next few years attempting to convince countries to accept stricter national targets for quantitative reduction of their greenhouse gas (GHG) emissions. We cannot afford to spend the next few years missing the wrong targets.

Simply put, we must move away, collectively, from an ineffective logic of constraint to a pragmatic logic of price incentives.

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The December 2011 Durban Conference proved, once again, that the "to each their own target" approach does not work. We must instead adopt a "one price signal for all" strategy.

If there were a single reason to improve the current mitigation logic, it would be this evident fact: developing countries, which now account for 60% of emissions worldwide, cannot accept what they perceive as an obstacle to their economic development, when developed countries have been able to get rich on unlimited use of fossil fuel energy. Indeed, in the foreseeable future, emerging economies, particularly China and India with Gross Domestic Product (GDP) annual growth rates of between 8% and 10%, will not accept absolute reduction targets for GHG emissions. On the other hand, these countries might be more open to the idea of a flexible levy of a price per tonne of carbon dioxide, a price from which they would derive revenues, and which their economic competitors would also be required to levy.

What we are proposing here is nothing revolutionary: for years, many experts and analysts – such as well-known climate economists William Nordhaus (Yale University) and Nick Stern (LSE), and, more recently, climate scientist Jim Hansen and co-authors – have called for the adoption of such a universal, harmonized carbon price. So has the OECD which recommends "Acting now to put a price on carbon"[3]. The value-added of our proposal lies in its simplicity and, we hope, its didactic value.

1. The great climate inconsistency: galloping threat, failing international system

Objectively speaking, the state of the climate is worrisome: while we cannot assess all the repercussions, we are entering the murky zone of increased global warming of 3°C (relative to the pre-industrial era) by the end of the 21st century.

In theory, the objective of a 2° C limit on increased global warming – a limit considered safe for human societies – could still be reached. However, given current GHG emissions and future emissions from existing facilities over their life cycle (for example, coal-fired electricity generating stations, factories, buildings and vehicles), this limit appears to be already unduly optimistic. Available studies concur that all voluntary commitments made by countries since the December 2007 Bali Conference, taken together, point to warming of at least 3° C during the 21st century. The International Energy Agency (IEA)[4] forecasts warming of over 3.5° C by the end of the 21st century if all countries respect their commitments, and warming of over 6° C if they do not respect their commitments and content themselves with their present policies[5]. At that level of

3. OECD, *OECD Environmental Outlook to 2050*, 2012, p. 111.
4. IEA, *World Energy Outlook*, 2011, p. 210.

warming, climate science warns of serious risks for ourselves and the planet's other living species – plant and animal: our planet will become much less hospitable to virtually all forms of life.

A great many studies[6] warn that climate warming of between 3º and 4º – the most likely outcome today – would jeopardize the survival of between 40% and 70% of plant and animal species; possibly lower crops in most regions, particularly in Africa; contribute to glacier retreat; dangerously dry up freshwater sources and precipitation, particularly in southern Europe, Central Asia, Africa and South America; and raise the sea level by possibly one metre. Given the acidification of carbon dioxide-saturated oceans, there would be massive dissolving of coral and potential disruption of the entire marine food chain. As well, the feedback effect could cause warming to accelerate under its own impetus, with such effects as hastening the release of methane, a powerful GHG now immobilized in oceans and permafrost.

For 20 years now, beginning with the *Convention on Climate Change* resulting from the 1992 Rio Conference, the international community has worked hard to take this very real threat seriously. Not only did countries accept the objective of limiting global warming to 2º C at the 2012 Cancún Conference; they also expressed "grave concern" about the gap between their own commitments and achieving this objective of a 2º C limit on increased global warming, in the preamble to their common statement at the December 2011 Durban Conference. They promised to "raise the level of ambition" to bridge this gap. But only one country at the Durban Conference – Denmark – made a commitment to achieving a more stringent objective. Nor does the Durban common statement set out any target date by which emission reductions must begin, or any global emission reduction objectives for 2020 or 2050.

In fact, in Durban, countries were able to agree only on a plan to reach an agreement, no later than 2015, for action to assemble all countries under the same legal system – to begin only in 2020. The very terms of this agreement are disquietingly vague: "*a process to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties*." Even Christina Figueres,

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5. If countries limit themselves to respecting their present commitments, warming by the end of the 21st century will be between 2.5º C and 5º C according to the United Nations Environment Programme (UNEP) (*Bridging the Emission Gap: A UNEP Synthesis Report*, 2010); between 2.9º C and 4.4º C according to the Climate Action Tracker (update, 11 December 2011); and between 3.5º C and 5º C according to Climate Interactive. The most recent forecasts conducted in anticipation of the next (2013-2014) Intergovernmental Panel on Climate Change (IPCC) report are for warming of between 2º C and 5º C. It should be noted that these forecasts assume that countries will reach their most demanding emission reduction targets (for example, by 2020 Europe will reduce its emissions by 30%, not just 20%), and assumes that no promised emission reductions are counted twice. However, a number of countries have noted that their emission reduction targets were conditional on the signing of a binding international treaty taking over from Phase 1 of the *Kyoto Protocol*, to end in 2012. At present such an international treaty is more uncertain than ever.

6. Climate Action Tracker, "After Durban: Risk of Delay in Raising Ambition Lowers Chances for 2º C, while Heading for 3.5º C"; see also: OECD, *OECD Environmental Outlook to 2050*, 2012, p. 86-89.

Executive Secretary of the *United Nations Framework Convention on Climate Change*, regretfully agreed that "*What [the agreement] means has yet to be decided*."

Although the *Kyoto Protocol* was indeed extended until 2017, Japan, Russia and Canada refused to accept new quantitative emission reduction targets; and Canada even announced that it would withdraw from the *Kyoto Protocol* following the Durban Conference. The European Union – here, once again, the only responsible developed power as far as climate is concerned – proposed, at the last moment, that countries consider adopting a new treaty that might be signed in 2015 and come into force in 2020.

This deadlock on reduction targets impacts all aspects of negotiations. That is the case for the funding that was promised to developing countries to help them deal with climate change. We do have an agreement on a collective objective (100 Billion dollars per year beginning in 2020) but nobody knows how much each developed country will have to contribute.

Countries are also seeking progress toward the establishment of a strategy to curb deforestation, named REDD-plus ("Reducing Emissions from Deforestation and Forest Degradation"). According to the Union of Concerned Scientists, financing the REDD mechanism for forest management alone would cost 25 billion dollars per year to reduce deforestation by 50% by 2020. Again, nobody knows where the money will come from.

Collectively, thus, we are facing what can be called a "great climate inconsistency": an increasingly untenable gap between the urgency of taking action and the inertia of international negotiations. Contrasting with the timidity of the Cancún and Durban agreements, the IEA emphasizes that global emissions must be capped starting in 2017 and must begin dropping in subsequent years for the "450 ppm scenario" to be possible[7].

Hence, the reason for our proposal is quite simple: we want to help find a practical solution to our shared heedlessness, and a way out of the great climate inconsistency that worsens as we watch. Some might call our proposal unrealistic. But given the current state of climate negotiations, we might ask back: who is really being unrealistic?

7. It is generally acknowledged that, for there to be a reasonable (50%) chance of limiting global warming to less than 2º C, the GHG level in the atmosphere would have to be limited to 450 parts per million (ppm). At present the estimated GHG level is 380 ppm, that is 100 ppm more than during the pre-industrial era. At its present rate, the GHG level is increasing by more than 2 ppm each year. The Organisation for Economic Co-operation and Development (OECD) and the IEA warn that the "450 ppm scenario" will be impossible unless global emissions are capped starting in 2017 and begin to drop in subsequent years (OECD/IEA, *Green Growth Studies: Energy*, 2011, p. 19). If no changes are made by 2017, all allowable emissions under the 450 ppm scenario will include those of existing facilities, with the result that electricity generating stations, factories, buildings, vehicles, electrical household appliances and farm equipment coming onstream after 2017 would be allowed no carbon emissions.

The same goes for the economic argument – so often wielded to justify climate surrender in the face of global crisis. The global financial crisis is actually not a valid reason to back off in the name of so-called "realism". Instead, it should encourage us to raise the level of effort: according to the IEA, every dollar not invested to combat climate change in the present decade will cost $4.30 after 2020, to offset increased emissions. At a time when global economic growth is very fragile and public finances have deteriorated in many of the world's economies, do we really want to pay four times as much in future for our present carelessness?

Box: Understanding precisely our collective failure in order to learn from it

Although laudable and still quite recent, the present international efforts to combat climate change are evidently failing. Four main problems explain this collective failure.

A problem of effectiveness: The instruments now being used do not allow us to contain the dynamics of global GHG emissions. These emissions have ballooned since 1990 (increases in the order of 50%) and were barely reduced by the major recession of 2008-2009 (carbon dioxide emissions decreased only slightly, by 1.4%, from 2008 to 2009 and increased by 5.8% in 2010). Thus the current emissions dynamic is diametrically opposed to what science recommends: since the Rio Conference, the annual rate of emission has jumped from 1% in 1990-2000 to 3.1% in 2000-2010.

A problem of transparency: The quantitative target of emissions in volume approach lends itself to various biases that distort climate performance of countries. For example, the selected reference date (generally 1990) is problematic for countries of the former Soviet Union, many of which have since joined the European Union. Performance is apparently good for the developed countries listed in Annex I of the *Kyoto Protocol* and taken as a whole, with emissions today lower by 8% than in 1990, an even better performance than the collective target of - 5.2%. But, in fact, while Russia and the other countries of the former Soviet Union decreased their emissions, developed countries such as the United States and Japan increased theirs. Furthermore, the *Kyoto Protocol* only accounts for production emissions (resulting from production within the borders of a given country) but not consumption emissions (those that result from production by one country included in products consumed in another country) even while the latter are growing at a much faster pace in developed countries.

A problem of inclusion: An international climate agreement must absolutely include all the large GHG emitters, starting with the emerging economies (China became the world's largest GHG emitter in 2007 and now accounts for close to a quarter of global emissions).

A problem of incentive: Developing countries perceive emission reductions as a "carbon constraint" that unfairly hinders their economic development; in times of economic crisis, quantitative targets can become hard for developed countries to accept as well.

It is our belief that any proposed reform intending to go beyond the present international climate negotiation system must offer solutions to these four problems.

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2. Local initiatives as a way out of global deadlock: necessary, but not sufficient

Given this admission of collective failure on the climate front, should we write off the objective of an international climate agreement? That is the conclusion of the self-described "pragmatic" school of thoughts on climate mitigation. The report entitled *Climate Pragmatism*, the result of a meeting between authors from the Breakthrough Institute and the Hartwell Group[8], argues that international agreements are only the sum of the political will of participating countries and thus cannot force governments to do things they do not wish to do.

Pragmatism, according to these authors, suggests we admit that the "carbon war" can never be won; at most, it can be better managed. Instead of a war, they thus suggest a "guerrilla campaign", waged differently with different targets in every country and every industry, based on authentic grassroots support and adapted to issues such as retrofitting, energy efficiency, forest management, biodiversity protection and air cleanup. The resulting cumulative specific victories would take us, they argue, farther than the illusory pursuit of a comprehensive climate treaty.

We, of course, agree that stalled international negotiations must not result in a slowing down of efforts made by countries, regions, cities and the private sector. It cannot be denied that many countries, localities and businesses are making serious efforts to promote sustainable development, sometimes with impressive results, and that these local initiatives are to be encouraged in accordance with the "polycentric approach" posited by Nobel Prize-winning economist Elinor Ostrom.

That said, it is hard to see how these efforts, laudable though they are, could create the impetus needed to elicit an effective response to the genuine and grave dangers of climate change. Fragmented initiatives can produce only partial results. And climate is a global public good: one tonne of carbon dioxide emitted in Beijing has exactly the same effect on global warming as does one tonne of carbon dioxide emitted in Montréal or Paris.

To avoid having decreased emissions by some countries (or regions and cities) cancelled out by increased emissions in other countries (or localities), we need a truly global agreement. What is more, countries and businesses will be afraid to do more as long as they have no assurance that their competitors will play by the same climate rules. Only an international agreement can give them that assurance.

For these reasons, necessary efforts to mitigate climate change must form part of an international plan; otherwise we will not achieve the objective of limiting global warming to about 2° C. In other words, without an international agreement,

8. See also *A New Direction for Climate Policy After the Crash of 2009* (the *Hartwell Paper*), Oxford University Press and London School of Economics, 2010; Amory Lovins, *Reinventing Fire: Bold Business Solutions in the New Energy Era* (ISBN 978-1603583718), 2011; and David G. Victor, *Global Warming Gridlock*, New York, Cambridge University Press, 2011.

local initiatives, while necessary, will not prove sufficient. Before concluding that such an agreement is essentially impossible and abandoning all hope of orderly climate change management, we would rather propose a new endeavour.

In our view, the best international co-ordination instrument we can establish to combat climate change is a global carbon price signal. We therefore propose that negotiations focus on this essential objective.

In Durban, delegates agreed to set up a working group to identify solutions for closing the gap between national emission reduction targets and the 2° C limit on increased global warming. This working group will accomplish nothing if it wastes its efforts asking individual countries to boost their emission reduction targets: that idea was tried after Cancún in 2010, without success. We have to try something else, something new. More usefully, this working group could propose a global carbon price signal.

That is the idea we will now explore.

3. Toward a harmonized, flexible global carbon price signal

What we propose is neither to maintain the *status quo* nor to start from scratch; neither to replicate Kyoto, nor to assemble a mismatched climate policy patchwork.

As a middle way, we propose a globally harmonized but nationally flexible climate policy, designed to stimulate implementation of a broad range of robust, consistent national low carbon strategies such as regulations, clean energy subsidies, international sectoral agreements by industry, land development plans, carbon markets, etc.

In this regard, we must first acknowledge that, despite all its shortcomings, the present system has two great strengths: it promotes a climate target that is global but takes into account individual countries' development levels (with references to a "Common But Differentiated Responsibility" and "comparable effort"); and it is based on "flexibility mechanisms" (economic instruments) that foster the transition to environmentally-sustainable economies and have eventuated in, most notably, the European Union Emission Trading Scheme (EU ETS), Europe's carbon market and the world's largest-ever pollution market. We must build on these two strengths while addressing their shortcomings.

Here is what we propose: countries would each make a commitment to introduce, in their respective jurisdictions, a carbon price aligned with a scientifically-validated international standard, in order for the world to achieve or at least come as close as possible to the objective of keeping global warming below 2° C over pre-industrial era levels.

Governments would be free to invest, as they see fit, revenues from the carbon emission levy and from the corresponding elimination of fossil energy subsidies. For example, they could invest in research and development in clean energy and public transportation. They could also choose to address social inequalities with respect to access to energy, for example by offsetting increased fossil fuel costs for low-income individuals and families.

Developed countries would finally be required to set aside part of their revenues to help developing countries introduce policies to mitigate emissions, adapt facilities and create carbon sinks (by means of reforestation, for example). The contributions of individual developed countries would be based on what their respective GHG emissions represent relative to the total emissions of all developed countries.

This simple plan would have many advantages and would address most problems we have identified in the present system. First of all, a price signal is the best economic instrument for reducing the costs of low carbon transition, and is thus a much more effective incentive than individual targets. Setting a carbon price would orient energy choices by internalizing the costs of pollution and climate change. As a concrete example, the United Nations Environment Programme (UNEP) proposes increasing the share of clean and renewable energies from their 2005 level of 2.5% of primary energy to 9% in 2020[9]. It also assumes a significant drop in the use of coal without carbon dioxide capture[10]. Changes like these are not affordable if GHG emissions remain free of charge.

Applied worldwide, a price signal is the best instrument for addressing problems of international competitiveness (that take the form of carbon leakage, imported emissions and climate dumping), thus addressing the present system's lack of transparency. As long as individual countries are afraid that carbon price-setting within their respective jurisdictions will scare businesses and investments away to countries where carbon dioxide emissions are still free of charge, carbon pricing will never reach the desired levels. As long as individual countries hope that other countries will do the job for them, as long as they can take advantage of other countries' efforts while doing as little as possible themselves, as long as they can wave the ready excuse "I'll do it when my neighbour does it" – in short, as long as they can be climate free-riders – our efforts will fall far short of the mark.

The way to put an end to carbon leakage and climate free-riding is to establish a global carbon price signal: this will allow countries and businesses to see the advantages of acting instead of taking the path of least resistance. It will be in their interest to lower their carbon emissions and thus to lower the price they pay for carbon. As soon as they can all realize that emissions reduction is in their best interest, efforts to that end can be seen as opportunities to enhance economic

9. UNEP, *Bridging the Emission Gap: A UNEP Synthesis Report*, November 2011, p. 11.
10. UNEP, *Bridging the Emission Gap: A UNEP Synthesis Report*, November 2011, p. 32.

cost-effectiveness, energy efficiency, command of external markets, and capacity for technological innovation. As well, a global carbon price signal would provide a clear point of reference for verifying compliance of individual countries with their own commitments.

A global carbon price signal, then, is a practical, feasible way to address the problems of incentive, inclusion, transparency and eventually – we may hope – effectiveness we have identified in the present system.

How high should this price signal be set? The objective is to set a price that makes research cost-effective and results in low-carbon solutions, thus acting as a catalyst for the full range of action needed to combat climate change. According to UNEP, measures to be taken by 2020 to keep us on track for the 2º C limit on increased global warming – the "450 ppm scenario" – have a median value of $38 per tonne of carbon dioxide equivalent[11]. According to Nordhaus[12], the optimum carbon tax would amount to $42 per tonne in 2015, rising gradually to $90 in 2050, and $220 in 2100. The fourth report by the Intergovernmental Panel on Climate Change (IPCC) called for a price of between $50 and $100 per tonne between 2010 and 2030 for the 450 ppm scenario to be possible. The IEA situates this price at between $95 and $120 per tonne by 2030[13].

While these options vary, there is broad consensus that this price signal should rise gradually and not peak immediately: the idea is to set a price trajectory, not a single fixed price.

Should this price trajectory be the same for all countries? Although theoretically a single global price signal would be preferable, there is consensus that not every country has the same capacity to deal with a single price. According to the plan proposed by the IEA[14], in Europe the price per tonne of carbon emission from electricity, industry and aviation should be $45 in 2020, rising to $95 (in constant dollars) in 2030, and $120 in 2035. The price in other developed countries should also rise to $120 by 2035, but on a slower trajectory than that of Europe. Emerging economies including Russia should adopt a price of $10 per tonne in 2020, $65 in 2030, and $95 in 2035.

Of course, these basic points are open and negotiable. Indeed, they should be debated at the highest scientific level. Personally, we see no reason why all developed countries could not sustain the same trajectory as Europe. We also recommend uniform application of the price signal across all sectors of the economy, including transportation.

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11. UNEP, *Bridging the Emission Gap: A UNEP Synthesis Report*, November 2011, p. 30.
12. Nordhaus, W., *Question of Balance: Weighing the Options on Global Warming Policies,* Yale University Press, 2008.
13. IEA, *World Energy Outlook*, 2011, p. 49.
14. IEA, *World Energy Outlook*, 2011, p. 66.

Although a price signal bracket of between $90 and $120 dollars per tonne (by 2035) may seem high, that is the price to pay if we want to combat climate change effectively. In fact, even at this level, results are not guaranteed. The IEA's 450 ppm scenario is based on a certain number of assumptions, some of which may appear quite optimistic. For example, it assumes that carbon dioxide capture and storage, a technology that is still underdeveloped, will account for 18% of forecast emission reductions from 2010 to 2035[15]. One thing is certain, however: if GHG emissions remain free of charge, industry will never invest the billions of dollars required to develop and deploy this technology.

Could individual countries' adopting different price signal trajectories perpetuate carbon leakage? With a price of $45 per tonne in developed countries and $10 per tonne in emerging economies in 2020, will high-carbon activities continue to migrate to developing countries? Although this risk cannot be entirely ruled out, we consider it to be moderate and controllable if price convergence is well established from the outset and well respected thereafter. If, as the IEA proposes, the price spread is limited to approximately $25 per tonne in 2035 ($120 per tonne for developed countries, $95 for emerging economies), the risk of carbon leakage can be contained. After all, today, a tonne of carbon emissions costs between $20 and $30 more in Europe than in America, and there is no carbon leakage between these two continents[16]. Many factors other than the cost of carbon, such as labour cost and quality, infrastructure and political stability, will continue to influence investment location[17].

A final point: GHG emissions are highly concentrated in a few countries. These are the countries that must adopt a harmonized price signal policy. Two countries combined, the United States and China, produce 41% of GHG emissions; 10 countries produce two-thirds of these emissions; and the 20 biggest GHG-emitting countries produce 80% of the total. The objective should be to have all these large GHG emitters – let's call them the "GHG 20" – accept a price bracket and a clear price signal trajectory.

4. Levying, acceptance, enforcement and legal status

4.1. Levying through mandatory results and independent instruments

The world's central banks enjoy the privilege of independent objectives or independent instruments, sometimes both, to reach their inflation targets. In the system we propose, countries are assigned a price signal objective but are free to choose the means they deploy to achieve this objective: they are subject to manda-

15. IEA, *World Energy Outlook*, 2011, p. 205.
16. David G. Victor, *Global Warming Gridlock*, New York, Cambridge University Press, 2011, p. 51.
17. Michael Skou Anderson and Paul Ekins, dir., *Carbon Energy Taxation: Lessons from Europe*, New York, Oxford University Press, 2009.

tory results (they must commit their respective economies to the price signal trajectory), but they enjoy independent instruments.

In terms of instruments, the simplest approach would be for countries to make use of tax policies, given that a tax is the instrument best designed to ensure the certainty and predictability required for levying a carbon price signal. As well, with a tax, compliance with the global carbon price signal would be relatively easy to verify. Nearly all countries are members of the International Monetary Fund (IMF), which receives information on countries' tax policies and thus could evaluate each country's application of a carbon price signal. The IMF would also be able to verify that countries did not indirectly re-subsidize fossil fuel energy.

In this way, countries would levy a tax on carbon and use the corresponding revenues to fund their priorities. They could choose to tax emissions at the time of fossil fuel consumption, or during the production process. They could reform their tax policies to tax fossil fuels by carbon content. For example, the present practice is for governments to tax coal very little[18]. If tax levels corresponded to carbon content, the reverse would happen: coal would be taxed at a higher rate than oil, which would be taxed at a higher rate than natural gas. Although this "climatization" of national tax policies does present technical difficulties, these difficulties are not insurmountable[19].

The other way to establish a carbon price signal is through the allocation of emission quotas (cap-and-trade or carbon market). Although more easily feasible politically, the main disadvantage of this system is that the price signal tends to fluctuate significantly, depending on the market and the volume of emission rights issued[20]. In addition to carbon or quota price fluctuations, this system presents other complications, for example multiple exceptions, vested interests and offsetting credits, emission quotas allocated free of charge, and exemptions for entire sectors of the economy. This type of system is so complicated that, at the end of the day, we may no longer have a very clear idea of the actual carbon price.

That said, the European Union has already and successfully introduced a carbon cap-and-trade system, and other countries have done so or are considering doing so. It would be unrealistic to ask these countries to dismantle these systems and put all their eggs in the tax policy basket

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18. Érick Lachapelle, "The Hidden Factor in Climate Policy: Implicit Carbon Taxes", *Sustainable Prosperity*, February 2011.
19. Hohan Albrecht, "The Use of Consumption Taxes to Re-Launch Green Tax Reforms", *International Review of Law and Economics*, 2006, 26: 88-113; Akira Yokoyama *et al.*, "Green Tax Reform: Converting Implicit Carbon Taxes to a Pure Carbon Tax", *Environmental Economics and Policy Studies*, 2000, 3: 1-20; Laurent, Eloi and Jacques Le Cacheux , *An Ever Less Carbonated Union? Towards a better European taxation against climate change,* 2009, Notre Europe ; Laurent, Eloi et and Jacques Le Cacheux, *Réforme de la fiscalité du carbone dans l'Union européenne : les options en présence*, *Revue de l'OFCE*, April 2011.
20. Éloi Laurent and Jacques Le Cacheux, op. cit.

In any case, these instruments are evolving toward mixed carbon tarification systems that include taxation features such as minimum pricing and emissions quota auctioning[21]. In these systems, what is crucial is limiting price volatility. In fact, the international agreement we propose introduces a great deal of price certainty, a feature that allows public and private-sector decision-makers to better plan investments that will favour low-carbon solutions.

The European Union is counting on the potential linkages that can be established between its system and the carbon markets certain countries – Australia, China – are planning to put in place. It is hoped that coordinating these various markets will, in time, result in a true world carbon market and, thus, the emission of a truly global carbon signal.

But at the present rate, the least that can be said is that this approach could take a very long time to show results, perhaps decades. Furthermore, its ability to curb climate change efficiently is not certain. That is why we propose to speed up the process significantly by beginning negotiations on a carbon price signal immediately. On this basis, there will be a great incentive for countries wishing to proceed with cap and trade systems to make them efficient enough to reduce their CO2 emission tonnage and thus, the price they have to pay. These countries will also see that it is in their interest to make their systems mutually compatible in order to reap the benefits of interconnection. Establishing a carbon price signal can only facilitate and hasten worldwide carbon market interconnection, something the European Union is bound to seek within the present system for a long time and, we believe, in vain.

In pricing carbon emissions through a tax or a cap and trade, of course we must gradually eliminate fossil fuel energy subsidies (since they counteract the effect of pricing): doing one without doing the other would be intrinsically contradictory. Thus countries would each make a commitment, in accordance with their respective price signal trajectory, to gradually eliminating their fossil fuel energy subsidies, the total of which amounted to $312 billion in 2009, $409 billion in 2010, and which could be as high as $660 billion in 2020 if no changes are made[22].

Eliminating fossil fuel energy subsidies, which in 2010 were 12 times as high as renewable energy subsidies, would have secondary benefits, not only environmentally but also economically and socially. Fossil fuel energy subsidies are a harmful social policy. The World Bank estimates that, in 2009, approximately 80% of benefits from fossil fuel subsidies[23] went to the 40% that make up the richest

21. See Robert Joshi, "'Hybrid' Carbon Pricing: Issues to Consider When Carbon Taxes and Cap-and-Trade Systems Interact", *Sustainable Prosperity*, 2009; also: Samuel Fankhauser, Cameron Hepburn and Jisung Park, "Combining Multiple Climate Policy Instruments: How Not to Do It", Centre for Climate Change Economics and Policy, February 2011; and, again, Éloi Laurent and Jacques Le Cacheux, 2009 and 2011, op.cit.
22. IEA, *World Energy Outlook*, 2011.
23. IEA, *World Energy Outlook*, 2011.

households[24]. The IEA estimates that, in 2010, only 8% of fossil fuel subsidies benefited the poorest population quintile: "*They are an inefficient means of assisting the poor; other direct forms of welfare support would cost much less*" [25].

In terms of economic policy, fossil fuel energy subsidies are an outdated, senseless policy that encourages overconsumption, hastens resource depletion, distorts market signals, places a heavy burden on governments, discourages investment in energy infrastructures, and stands in the way of the adoption of more environmentally-friendly energy practices and processes by energy-intensive industries. Furthermore, it makes little economic sense to waste scarce and precious public financial resource to support what is probably the record profit-making industry in the history of capitalism and will continue to be for a number of years given the prospect of fossil fuel price increase.

The international agreement on carbon pricing must also ensure agreement on the pace of eliminating fossil fuel energy subsidies. Fuel price increases that are too sudden, ill-designed, and not immediately offset by substantial, well-targeted social transfers to benefit low-income citizens could meet strong public resistance. Nigeria provides a recent example. That said, according to the OECD, eliminating these subsidies, even unilaterally, would benefit most countries economically[26]. The IEA proposes that all importing countries eliminate these subsidies by 2020, and that exporting countries proceed more slowly, eliminating most of these subsidies by 2035[27].

4.2. Fostering acceptance through the justice principle and compensation mechanisms

The justice principle and compensation mechanisms are both indispensable, first at the international level. We noted from the outset that, for developing countries, this harmonized carbon price signal would be easier to accept than absolute, mandatory GHG emission targets. For emerging economies, with annual growth rates of between 6% and 10%, an absolute emission reduction target may look more like an obstacle to economic expansion, while a harmonized carbon price signal that is adopted by these countries' competitors and the revenues of which is for them to use as they see fit, opens up much more interesting options. It is nevertheless true that imposing such a price signal could have more negative impacts on wellbeing in developing countries than in developed countries.

Thus we must ensure that there are international compensation mechanisms. In the name of the "Common But Differentiated Responsibility" principle, developed countries would be required to set aside part of their revenue to help developing

24. "Climate Change and the World Bank Group", *World Bank Report*, World Bank, Washington DC, 2009.
25. IEA, *World Energy Outlook*, 2011. p.32.
26. IEA, *World Energy Outlook*, 2011. p.32.
27. IEA, *World Energy Outlook*, 2011, p. 34.

countries introduce policies to attenuate emissions, adapt to climate change impacts and create carbon sinks. This requirement would solve the problem of funding the annual injection of $100 billion into the Green Climate Fund that developed countries agreed to provide starting in 2020. This amount could even be increased. We propose that the proportion of individual developed countries' contributions correspond to the proportion their respective GHG emissions represent of total emissions from all developed countries (on a current or cumulative basis). The lower a country's emission level, the lower its share of the financial effort, which would be a further emission reduction incentive.

Furthermore, negotiations for a carbon price signal will hasten the implementation and coordination of robust and functional carbon markets, which in turn will channel important private investments toward such forest management and carbon sink mechanisms as REDD – an objective on which countries such as Brazil are highly insistent.

One thing is certain: without such a transfer mechanism our plan could never work, because it would violate the fundamental principles of climate justice. The poorest and most vulnerable countries are not responsible for their misfortune. They suffer the consequences of climate warming, but they did not cause it. In fact, in December 2011 in Durban, a group of developing countries led by India, China, Brazil and Saudi Arabia expressed their opposition to the idea of an international carbon tax, pointing out that, in the absence of a financial compensation mechanism, this tax would work to the detriment of poor countries[28].

At present, negotiations on the annual injection of $100 billion into the Green Climate Fund have come to a halt. In Durban, some developed countries claimed that a mechanism for identifying funding sources was premature. It is quite possible that the only way to kick-start these negotiations again is to direct them toward setting a carbon price signal, accompanied by the compensation mechanism we propose. In Durban, a working group was set up to consider how to inject $100 billion per year into the Green Climate Fund starting in 2020. It would be desirable for this working group to examine closely the possibility of obtaining these funds via a world carbon price signal.

Justice principles and compensation mechanisms are also indispensable at the national level. We should first emphasize that adopting a carbon price signal system would have significant secondary benefits, notably: more competitive clean and renewable energy, a more substantial and more diversified energy portfolio, energy savings, reduced local and trans-border air pollution, and reduced pollution-induced morbidity and mortality rates. Furthermore, governments can decide, for example, to lower individual and corporate income tax substantially, thus stimulating their economies by alleviating the tax burden on productive activities

28. IEA, *World Energy Outlook*, 2011, p.211.

such as work and investment. The only thing countries will not be allowed to do with this revenue is to fund fossil fuel energy, as the international agreement must clearly state.

Yet, governments will undoubtedly need to use part of their carbon revenue to address social inequalities. Since the main issue with a carbon tax has to do with political acceptability, that is political economy, it will be appropriate to plan for social compensation. A new energy tax, even offset by lower existing income tax, will necessarily face strong public resistance, particularly among citizens who are the least well-off – as one author of this paper is in a good position to know, since his attempt to convince Canadians of the wisdom of such a tax reform in the 2008 federal election was unsuccessful[29]. Thus governments might do well to use part of their newfound tax revenue to offset all – if not more – of the increased costs of fossil fuel energy for low-income individuals and families.

4.3. The issue of enforcement: credibility principle, possible border carbon taxes

One sensitive issue remains to be examined: what should be done about defaulting countries, that is, countries that fail to meet their commitments or refuse to be parties to the international agreement we propose? In our view, the response lies in the rules of international trade.

The international agreement would allow countries to levy border taxes on products from countries that do not establish a carbon price signal in accordance with the international standard. Of course, this solution would be a last resort, to be applied after the usual warnings have been issued (to the extent possible, we need to avoid having these retaliatory measures degenerate into a "carbon trade war").

The present trade rules already provide latitude for factoring in compliance with climate-related trade practices. In the foreword to a report on trade and climate change, UNEP Executive Director Achim Steiner and World Trade Organization (WTO) Director General Pascal Lamy note that "there is considerable scope and flexibility under WTO rules for addressing climate change at the national level"[30]. For example, on 21 December 2011, the European Court of Justice ruled that the European Union was entitled to levy a carbon tax on non-European companies arriving in or leaving from European countries, since European countries are required to pay this tax.

The WTO and UNEP point out that countries already make border tax adjustments on all sorts of products, with various objectives: reducing cigarette or alcohol use, promoting human health, reducing risks associated with asbestos, reducing air pollution resulting from gasoline consumption, and protecting plants,

29. In 2010, author Éloi Laurent saw the French government abandon a carbon taxation project, in the face of strong public opposition.
30. Ludivine Tamiotti *et al.*, *Trade and Climate Change: WTO-UNEP Report*, 2009, p. v.

whales, fish stocks and clean air[31]. The important thing is that "the charge imposed on the imported product needs to be equivalent to the tax imposed on the "like" domestic product"[32].

If a country complies with the international agreement on climate, things are simple: that country is immune from these corrective border measures since it applies the agreed-upon carbon price signal to its own products before exporting them. With a defaulting country, things are more complicated. What should the penalty amount to?

Of course, at the border it can be difficult to assess the volume of GHG emissions included in a product because this volume depends on a great many factors, such as the source of the energy used and the production process. At this point, "some sort of certification or labelling as to the relevant aspects of the production process used" may be used[33]; if the manufacturer does not provide this information, the product may be taxed on the assumption that it was manufactured using the predominant method of production or the best available technology (in the past, the GATT panel accepted the use of this method in the case of a tax on chemicals levied by the United States).

In any case, the international agreement we propose must send a clear message to all large GHG emitters: if you do not levy a carbon price on your products before exporting them, other countries will do it for you – and will keep the resulting revenue. In this way, it will be in each country's interest to comply with the international agreement, to levy a carbon price on its own emissions, and to use the resulting revenue as it sees fit.

4.4. The issue of legal status

One last point regards the legal status of such an agreement on a global carbon price signal. We have assumed that the decision-makers of all the world's countries are acting in good faith. They are sincere in making a commitment to limit warming to below a level at which scientists predict dangerous climate disruption. We therefore assume that countries believe climate change mitigation action is necessary.

Of course, if that is not the case, then no international agreement is possible. For example, if come Fall the United States were to elect a President and a Congress that do not believe in the threat of human-induced climate change, the objective of an international agreement would be impossible to achieve.

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31. Ludivine Tamiotti *et al.*, *Trade and Climate Change: WTO-UNEP Report*, 2009, p. 107.
32. Ludivine Tamiotti *et al.*, *Trade and Climate Change: WTO-UNEP Report*, 2009, p. 103.
33. Ludivine Tamiotti *et al.*, *Trade and Climate Change: WTO-UNEP Report*, 2009, pp. 101-102.

The United States Constitution requires the support of two-thirds of that country's Senate to ratify a treaty. For this reason, it would be more prudent to aim for an international agreement that does not have treaty status.

Such an agreement is entirely possible with the model we propose. Following a Conference of the Parties (COP) to the *United Nations Framework Convention on Climate Change*, the delegates would issue a joint statement of agreement on the carbon price signal trajectory that each country is committed to follow. It would then be the responsibility of each government to have this price ratified by legislation or in a budget.

The important thing is that each country be able to adopt the agreed-on price signal with the assurance that their competitors will do the same. Ideally, this assurance should be guaranteed in a treaty. In practice, an international agreement would be more realistic.

5. Conclusion

There is no doubt that international negotiations on climate must continue. At the same time, however, we must be daring and inject into these negotiations a new idea that can give us the impetus we lack: adopting a harmonized, flexible carbon price signal system.

In this way, the world would have available an instrument that is vital to its sustainable development. At last, carbon emitters would be required to pay the environmental price for their actions. Consumers and manufacturers would have an incentive to choose lower-carbon-content goods and services and to invest in new emission-reducing forms of technology.

To achieve this objective, we cannot throw the past away and start over: we must build on what has been accomplished. However, we no longer have the luxury of waiting out bad solutions: we must pick up the pace considerably, and we must change our approach.

There is a general feeling that the Cancún-Durban fabric is so fragile that we should not dare alter a single thread. We realize that, as a result, some observers will consider our proposal hard to negotiate or simply unrealistic. But what is the alternative? The years 2010 and 2011 were among the hottest ever recorded, while carbon dioxide emissions reached their highest historical level, despite the worldwide recession. The world met for COP 17 in Africa, a continent whose entire eastern half is ravaged by drought. The United States had the most expensive year it has ever experienced in terms of economic consequence of weather disasters. The government of China, in its *Second National Assessment Report on Climate Change*, recently acknowledged that warming constitutes a threat to its economic growth and development, makes its drinking water more scarce, lowers its crops, and

intensifies drought and flooding. How many warnings do we need before we ratchet up our efforts to match the challenge?

We are firmly convinced that there is a policy that can lead to global sustainable development. Yes, it is possible to move from self-destructive development to sustainable development. But we must move ahead without delay: given the present pace of global warming and our limp response so far, each passing year can only make indispensable changes even harder.

At the moment, Europe is trying to strengthen its carbon market and link it with other markets. The United States, Canada, Japan and a few other developed countries are refusing to strengthen their climate policies as long as other large emitters refuse to follow suit. And given their strong economic growth, China, India and other emerging countries are loathe to adopt absolute reduction targets. The only way to unfreeze these negotiations before it is too late is to re-orient them toward the establishment of a carbon price signal.

The biggest carbon emitters (the "GHG 20") should adopt a carbon price signal, harmonized in principle but flexible in practice. What better place to undertake this approach than in Rio, right where the problem – for which this instrument is the solution – was recognized by the international community 20 years ago?