"Common but Differentiated Responsibilities and Respective Capabilities" as Part of the Post-2012 Climate Regime

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The Copenhagen Accord confirms "common but differentiated responsibilities and respective capabilities" (CBDR) as a guide to action on climate change—based on different responsibilities for developed and developing countries. The article explains CBDR, then looks at instruments to facilitate technology development and transfer for renewable energy systems (RES), which in theory fits well with CBDR. The Kyoto Clean Development Mechanism (CDM) is consistent with CBDR but has not been effective enough to date. Changes to CDM such as multi-project "programs of action" may improve effectiveness. Nationally appropriate mitigation actions (NAMAs) commitments by developing countries and better monitoring of NAMAs may also spur RES technology diffusion. Proposed "sector carbon markets" (SCM) would strengthen incentives for RES technology even more, but because SCM involves emission reduction obligations it faces resistance from the same developing countries that complain generally about IPR barriers. Voluntary bilateral technology cooperation agreements may capture some of the technology diffusion benefits of an SCM program. But appeals to CBDR and avoidance of mitigation commitments by developing countries remain an obstacle to improved cooperation for transfer of RES and other climate-friendly technologies between developed and developing countries.

1. Introduction

The Bali Action Plan (BAP)[1] adopted at the 13th Conference of the Parties to the UN Framework Convention on Climate Change (COP13) in 2007 continues to guide the preparation of the post-2012 climate regime. It is now supplemented by the Copenhagen Accord,[2] the non-binding but "operational" roadmap for future work adopted by the COP15, which begins as follows:

> *We underline that climate change is one of the greatest challenges of our time. We emphasise our strong political will to urgently combat climate change in accordance with the principle of common but differentiated responsibilities and respective capabilities.*

The international community has thus reiterated that "common but differentiated responsibilities and respective capabilities" (CBDR) is a leading principle guiding future action on climate change.

CBDR has a long history in climate change policy, as well as in sustainable development and other areas of international environmental law. In this short paper, we briefly summarize the extensive legal literature on CBDR[3] by way of background to those not deeply familiar with it. Our main purpose is to explore the implications of CBDR for the road ahead mapped out by the Copenhagen Accord, with particular reference to the themes of technology development and transfer and intellectual property rights at the center of the Regulating Global Concerns conference and this symposium issue. What regulatory frameworks and what legal instruments will facilitate appropriate technology development and transfer in accordance with the CBDR principle of the Copenhagen Accord?

2. Background on CBDR for climate change

Article 3.1 of the U.N. Framework Convention on Climate Change[4] (hereinafter UNFCCC or the Convention) lays down as an operative guideline

that the effort of the Parties to "protect the climate system," should be carried out "on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities". Article 3.1 is the earliest articulation of CBDR in exactly those words,[5] but the basic concept has a longer history in international environmental law, both before and after the UNFCCC. From that history we gain some understanding of its meaning and intended effect.

The UNFCCC was opened for signature in 1992 during the U.N. Conference on Environment and Development" (hereinafter UNCED) in Rio de Janeiro. UNCED strived to synthesize and integrate environment and development issues,[6] working with the concept of sustainable development. Principle 7 of the Rio Declaration declares:

> *States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity for the Earth's ecosystem. In view of the different contribution to the global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit to sustainable development in the view of the pressure their societies place on the global environment and of the technologies and financial resources they command.*

In Principle 7 we see the twin ideas of "common" responsibility and "differentiated" responsibility. The *common* responsibility is the obligation of all States to work in a spirit of "global partnership" in protecting and restoring the Earth's ecosystems. But the responsibility is *differentiated* between developed and developing countries. The developed countries have a special "responsibility" in two respects: an implicit legal responsibility to others because of past and current acts, and an equitable responsibility to use their technical and financial capacity to alleviate the world's environmental and developmental problems.

Principle 7 has significant implications for sustainable development generally,[7] and, as reflected in Article 3.1 of the UNFCCC, for climate change in particular. The consequences of the CBDR principle emerge in UNFCCC Article 4.2 - 4.8,[8] where the developed countries commit themselves, for example, to "take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing countries, to enable them to implement the provisions of the Convention".

The antecedents of the equitable aspect of differentiated responsibility in Rio Principle 7 can be found in the 1972 Stockholm Declaration,[9] where it is linked closely with the idea of "respective capabilities." Stockholm Principle 23 declares as an essential consideration "the extent of the applicability of standards which are valid for the most advanced countries but which may be inappropriate and of unwarranted social cost for the developing countries." Principle 12 reminds nations to "tak[e] into account the circumstances and particular requirements of developing countries" and suggests "the need for making available to them ... additional international technical and financial assistance" for the purpose of incorporating environmental safeguards into their development planning.

For climate change, the basic division between developed and developing countries, Kyoto Protocol Annex I and non-Annex I Parties, is based on classifying as "developed" all the members of the OECD as of 1992 along with the eastern European "economies in transition" at that time. After 20 years of economic changes, this categorization has become increasingly problematic. In the second decade of the 21st

century, some "developing" country economies have a higher per capita income than some countries still classified as "developed".[10]

In its origins, CBDR expresses an expectation that developing countries have a responsibility to improve their environmental performance, but that they deserve special consideration in how that responsibility applies to them and special assistance in fulfilling it. Yet, comparing the soft tone of the Stockholm Declaration to rather more accusatory formulation of CBDR in the UNFCCC, it seems that earlier expressions of differentiation in the context of sustainable development have become infused with a stronger sense of assigning responsibility for past acts and making that responsibility the basis for a forward-looking obligation to remediate the environmental effect of those acts.[11] In particular, UNFCCC Article 3.1, in the sentence immediately following the statement of CBDR, goes on to say: "Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof". That sentence has come to dominate international climate diplomacy on CBDR.

The UNFCCC COP1 in 1995 set the course for the Kyoto Protocol. The Berlin Mandate of COP1[12] reinforces the implication of CBDR that the developed countries have an obligation to be the first to mitigate. After a reference to the "right" of developing countries to sustainable development,[13] the Mandate takes note of, "The fact that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that the per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs".[14] Thus, in the climate change context, the developing countries were granted an essentially unconstrained opportunity to increase their own emissions in the name of sustainable development. The Kyoto Protocol formally adopted this approach.

This understanding of CBDR was reinforced in the Plan of Implementation adopted at the U.N. World Summit on Sustainable Development, Johannesburg 2002. In that document, the CBDR principle of Rio Declaration Principle 7 is referred to eight separate times, with a special emphasis on poverty eradication as an indispensable requirement for sustainable development.[15] Nearly 10 years later, these ideas remain the dominant frame of reference for CBDR in climate negotiations.

3. The Copenhagen accord

It is not surprising that the Copenhagen Accord reflects the particular development of the CBDR principle in the UNFCCC, the Berlin Mandate, and the Kyoto Protocol. Indeed, CBDR was further elaborated in the preparatory work for COP15 under the Bali Action Plan (BAP) – with its mandate to the two Ad Hoc Working Groups AWG-KP (Kyoto Track) and AWG-LCA (Long Term Cooperation Track). The BAP includes a long-term global goal for emission reductions to achieve the ultimate objective of the Convention in accordance with the principles of the Convention, in particular the CBDR principle, "taking into account social and economic conditions and other relevant factors". Under the plan, the nationally appropriate mitigation actions (NAMAs) of developing countries are to be supported by technology transfer, capacity building and economic support. Furthermore, there is agreement for enhanced action on technology development and transfer to support action on mitigation and adaptation. The BAP preparatory work did not, however, lead to the hoped-for outcome of a definitive new agreement at COP15. Rather, twenty-odd leaders convened

by the Danish Prime Minister as "Friends of the Chair" drafted the "Copenhagen Accord" in the final 24 hours of the conference.[16] The Accord was conceived as the foundation for a new and better process outside the chaos at COP15. The aim is a comprehensive political agreement that puts the parties on a clear path to concluding a legally binding post-2012 agreement. The Accord is, by its own terms, "operational immediately," but it is not a legally binding document.

In its 12 paragraphs, the Copenhagen Accord has the ambition to establish the mechanisms, sources, and levels of support to be provided in a final agreement for mitigation, adaptation, capacity building, forestry and technology development and transfer. The influence of CBDR on the Accord is immediately obvious. In particular, the Accord reflects several levels of differentiation of responsibilities and capabilities that are already part of the fabric of the Kyoto regime. It is on this aspect of the Accord that we will focus.

As we noted at the beginning of this paper, Paragraph 1 of the Accord announces CBDR as a guiding principle, with a further commitment, "on the basis of equity and in the context of sustainable development, [to] enhance our long-term cooperative action to combat climate change". It then recognizes the critical impact of climate change and the potential impacts of response measures on countries "*particularly vulnerable*" to its adverse effects, and a corresponding need for international support for a comprehensive adaptation program. Here we have recognition of a further differentiation, namely a differentiation among developing countries between the most vulnerable and others. This same differentiation appears elsewhere in the Accord.

Even while agreeing that "deep cuts in global emissions are required", Paragraph 2 of the Accord reinforces the well-established basic differentiation between developed and developing nations:

> *We should cooperate in achieving the peaking of global and national emission as soon as possible, recognizing that the time frame for peaking will be longer in developing countries and bearing in mind that social and economic development and poverty eradication are the first and overriding priorities of developing countries and that a low-emission development strategy is indispensable to sustainable development.*

Similarly, Paragraph 4 of the Accord provides specific obligations for Annex 1 Parties:

> *Annex I Parties commit to implement individually or jointly the qualified economy-wide emission targets for 2020, to be submitted in the format given in Appendix I by Annex I Parties to the secretariat by 31 January 2010 for compilation in an INF document. Annex I Parties that are Party to the Kyoto Protocol will thereby further strengthen the emission reductions initiated by the Kyoto Protocol ....*

This careful phrasing points to another differentiation, at least one in legal status. The United States is an Annex I Party to the UNFCCC, and so is included in the commitment to submit emission targets. It did so in a timely way as called for in Paragraph 4. The United States, however, is not a Party to the Kyoto Protocol and has, as is well known, not established a coherent national target for emission reductions, so its commitments will not "further strengthen" emission reductions.

Paragraph 5 of the Accord calls on Non-Annex I Parties to implement their own mitigation actions. The Non-Annex I parties are differentiated for this purpose into "*least developed countries and small island developing States*" (hereinafter LDCs and SIDS) on the one hand and other Non-Annex I parties (including the BASIC countries: Brazil, South Africa, India and China). For the LDCs and SIDS, action is voluntary and (financial) support is expected. Other developing

nations are "obligated" by the Accord to implement mitigation actions, and are to communicate their actions consistent with Article 12.1(b) of the UNFCCC. No specific mitigation actions are indicated, the chosen actions are not obligatory under the Kyoto Protocol, and the Accord neither links nor de-links compliance with the NAMAs to any level of financial support. Mitigation actions seeking support, however, must be identified and recorded in a registry, and supported mitigation measures are subject to reporting and verification. This language is presumably included to cover Clean Development Mechanism (CDM) activities, among others. If a binding solution on the post-2012 regime is based on the Accord, it will change the responsibilities of the BASIC-countries (and other emerging economies) compared to the current situation under the Kyoto Protocol.

Paragraph 3 of the Accord concerns adaptation, recognizing it as "a challenge faced by all countries". Nevertheless, by giving special attention to the adaptation challenges for "those that are particularly vulnerable, especially least developed countries, small island developing States and Africa" it reflects a more or less well-established differentiation among developing countries. But note the calibration of differentiation between Paragraph 3 and Paragraph 5: Paragraph 5 (framing the conditions for NAMAs taken and envisaged by non-Annex I Parties) identifies LDCs and SIDS in general, whereas Paragraph 3 (on adaptation) adds "Africa" to its list of the "particularly vulnerable." This presumably encompasses any African States that are not LDCs or SIDS; South Africa is one such nation that comes to mind. Finally, to be sure that there is no ambiguity about the basics of CBDR, Paragraph 3 ends with another obligation of developed countries—to "provide adequate, predictable and sustainable financial resources, technology and capacity-building to support the implementation of adaptation action in developing countries." But another implication of this final sentence is that no developing country, including any of the BASIC countries, is obligated to help the LDCs with adaptation.

The remaining paragraphs of the Accord are devoted almost entirely to matters of financial and other support to flow from developed countries to various categories of developing countries as part of the differentiated responsibility of the developed countries. Paragraph 6 on reducing emission from deforestation and forest degradation in developing countries (hereinafter REDD-plus) or similar activities, for example, does not differentiate recipient parties and their responsibilities, but focuses on "the mobilization of financial resources from developed countries". Paragraph 7 (concerning the various approaches to be used in the climate policy) introduces another differentiation of parties: "low emitting economies" as a special class of developing countries. The *low emitting* developing economies are "especially" to be provided with incentives "to continue to develop on a low emission pathway."

Paragraph 8 of the Accord details the "scaled up, new and additional, predictable and adequate funding as well as improved access" expected to be provided by developed countries. In the immediate future (2010-2012), developed countries commit to funding "approaching" US $30 billion of new and additional resources for mitigation and adaptation, prioritized for use by the "most vulnerable", meaning here the LDCs, SIDS and Africa. Further ahead, US $100 billion is to be "mobilized" by 2020 from a mix of public and private sources. This further commitment is offered "in the context of meaningful mitigation actions and transparency on implementation" it

is not clear exactly what this means (mitigation and implementation by whom?) or whether the $ 100 billion commitment is in some way contingent on progress on mitigation and transparency. Once again, it is notable that major emerging economies like China and Brazil are without any responsibility, in mitigation or financial contribution, with respect to solidarity in meeting the goals of the UNFCCC.

Finally, Paragraph 11 of the Accord has special relevance for the topic of this paper.

> *In order to enhance action on development and transfer of technology we decide to establish a Technology Mechanism to accelerate technology development and transfer in support of action on adaptation and mitigation that will be guided by a country-driven approach and be based on national circumstances and priorities.*[17]

Interestingly, Paragraph 11 has no language about differentiating responsibilities. Technology development and transfer actions are to be based only on "national circumstances and priorities." That language has suggestions of differentiation and certainly of "respective capabilities," but it avoids broad classifications in favor of a case-by-case approach.

4. The regulatory framework for technology development and transfer as shaped by CBDR

Technology development and transfer of energy technologies, and specifically renewable energy technologies, can make a contribution to both mitigation and adaptation. Energy technology and the energy sector are not specifically mentioned in the Accord, but such issues are on top of the list in the negotiation process - together with deforestation, which is explicitly mentioned.

The CBDR principle as outlined above has had an important influence in shaping the Kyoto Protocol regulatory framework and the adjustments to it being proposed under the BAP and the Copenhagen Accord for both the mitigation of climate change and adaptation to it.

With respect to mitigation, the most obvious effect of CBDR is in the differentiation between Annex I Parties and non-Annex I Parties, and this basic distinction is maintained in the Accord. Non-Annex I still have no mitigation obligations. They are to develop and commit to NAMAs, but their specific mitigation actions may be, and to date have always been, voluntary. For example, in its submission to the UNFCCC Secretariat in compliance with the Copenhagen Accord, Brazil "indicates" the NAMAs it will take, but explicitly observes that "the envisaged domestic actions as indicated are voluntary in nature."[18] Developing country NAMAs are often also framed expressly in terms of sustainable development and poverty eradication. So, for example, Brazil's NAMAs emphasise reduction of deforestation, improvements in agricultural practices, and energy efficiency initiatives. Most developing countries also link their NAMA implementation to the compliance by Annex I Parties with their mitigation obligations, referring to Articles 3 and 4 of the UNFCCC.

Technology development, especially in the energy sector, is obviously a key element of climate mitigation undertakings by Annex I Parties. The EU, for example, is specifically committed to increases in renewable energy supply and energy efficiency as part of its mitigation program. Presumably, much of that technology will be transferable to developing countries, and there is the expectation that such transfer should take place. In the UNFCC and Kyoto Protocol framework, the CDM is an important vehicle for such technology transfer. It is a specific expression of the CBDR principle, serving three vital goals of the climate regulatory regime. First, it helps the developing countries

that host CDM projects to make their own contribution to mitigation and it improves their long-term capacity to limit their own GHG emissions. Second, it provides a cost-effective means for Annex I Parties to meet their Kyoto emission reduction obligations. Third, it contributes to sustainable development by promoting the transfer of technology and financing from developed to developing countries, thereby contributing to environmentally sustainable economic development in the host country.

Adaptation has two dimensions: actions and financial support. For each dimension, we see in the UNFCCC, the Kyoto Protocol, and the Accord some further refinements of the CBDR principle. Most notably, for adaptation issues there is specific attention to the circumstances of the LDCs and those countries that are especially vulnerable to climate change – especially SIDS. The new element that the Accord introduces in this context is the additional specific reference, for some purposes, to Africa.

The actions or initiatives that may be appropriate for adaptation will be specific to each country, and also to certain groups of countries, consistent with CBDR. Effective adaptation depends, first of all, on the particular climate change effects that are anticipated for that country, to the extent that those can be identified. The situation of the SIDS is an obvious example, especially as compared with a landlocked country like Rwanda. Adaptation needs will also be determined by the environmental, economic and cultural circumstances of each country or region. The CBDR principle, as articulated most recently in the Accord, focuses special attention on the adaptation needs of those countries that are in some way more vulnerable to climate changes, including specifically the rather urgent threats to physical security facing the SIDS.

The other dimension of adaptation is providing the financial support to carry out those actions or initiatives. Developed countries are expected to self-finance their own adaptation measures. They are also expected to be the primary source of financial contributions to the adaptation needs of developing countries. With respect to technology transfer in the energy sector, the Accord reiterates the desirability of helping low-emitting developing countries develop their energy sectors along a low-emitting pathway. But the Accord glosses over one major issue with respect to financial support for adaptation: the degree to which the economically strongest among the developing countries should be allowed to benefit from developed country financial contributions. Indeed it might be asked at this time whether the richest developing countries should be donors rather than recipients of financial support. Perhaps the Green Climate Fund provided for in Paragraph 10 of the Accord can be the forum for resolving those questions. Paragraph 10 gives few details about this Fund, saying only that it will be an "operating entity" of the financial mechanisms of the UNFCCC and that it is established to "support", among other objectives, "adaptation, capacity-building [and] technology development and transfer."

5. The CBDR principle and the mix of instruments

Some important instruments of relevance for technology development and transfer being discussed are now being discussed internationally in the negotiations on the future of the climate regime leading to COP16 in 2010 and COP17 in 2011.

- *Technology cooperation focusing on the needs of specific sectors*[19]

- *Re-designed carbon markets linking innovation and modernization in the energy-intensive sectors*[20]
- *CDM based on new standards for certification*
- *New multi-CDM-projects with standardized baselines based on Programmes of Activities (PoAs) covering a set of activities of the same type under a single umbrella*
- *Non-binding approaches (also called "no-lose targets") – national or sectoral*
- *Sectoral crediting mechanisms (SCM)*[21] *as mechanisms to grant credit for reducing emissions in a covered sector compared to the BAU scenario for that sector*
- *NAMAs by developing countries.*

The principal mitigation and adaptation technologies of interest with respect to technology transfer encompass energy generation, including renewable energy system (RES) technologies such as solar photovoltaics (PV panels) and wind power, and energy efficiency. In some respects, the emerging economies are already in a strong position in the energy sector. Wind turbine manufactures in China and India are in the top ten and the world's leading producers of PV panels are China and Taiwan.[22] Consequently, one of the hot questions in the current negotiations on the future climate regime is whether the CBDR principle is relevant to technology transfer from the developed countries to the most advanced developing countries.

Many low-carbon projects in developing countries, mainly focused on RES and energy efficiency, can be financed by a new and better-designed CDM. The CDM has the advantage that it "directly links mitigation action with capacity building, technology transfer and financing."[23] It allows firms in developed countries to earn Certified Emission Reductions (CERs) as credit against their Kyoto emission reduction obligations through investment in emissions-avoiding projects implemented in developing countries. The CDM thereby ensures common but differentiated responsibilities between the parties involved: the developing country (the host country) avoids emissions and benefits from the transfer of technology, while the developed country (the donor country) can use the CERs from the project to offset some of its domestic GHG emissions. CDM is thus, in principle, a good example of technology transfer based on the CBDR principle.

Nevertheless, the implementation of the CDM has been criticized for various reasons. Due to its design as a project-based mechanism, the CDM does not often engage the host country in ways that would lead to structural changes and significantly influence energy system development.[24] Innovation and technological progress by a new CDM project in LDCs cannot be a mere reproduction of what is happening in the donor countries – innovations must be tailored to local opportunities, capabilities and needs.[25] Moreover, in practice the LDCs, and even many other developing countries, do not have the administrative systems and legal rules necessary to attract or receive the investments associated with CDM projects.[26] Another weakness connected to the current CDM design is the lack of credibility regarding their environmental integrity objectives. CERs are not necessary real and additional,[27] and the CDM has shown very little success in the area of end-use energy efficiency.[28]

The CDM system will remain in force also after the end of the first Kyoto commitment period.[29] However, in the absence of internationally agreed quantitative reduction commitments, the interest

in new CDM projects will depend on national legislation. The mandatory European cap-and-trade system (EU ETS) established by a directive will accept CERs after 2012[30] – but with limitations to ensure that a large part of the EU emission reduction is done domestically.[31] The EU's position on the post-2012 agreement is based on the essential concern for environmental integrity. An enhanced CDM in the post 2012-regime would require broader participation, including involvement of the US and the major emitters from the developing countries, commensurate with the Parties' responsibilities and capabilities.[32]

One alternative to CDM, sectoral approaches and sector specific actions through SCM (a sector trading carbon market), is referred to in the BAP. Taking the UNFCCC Article 4, paragraph 1(c) [33] as the basis for its work, the AWG-LCA has developed proposals for cooperative sectoral approaches and sector-specific actions in order to enhance the implementation of paragraph 1(c).[34] The main objective of the SCM is to cover sectors that have a large reduction potential, sectors that are most exposed to carbon leakage, or sectors that significantly affect production costs of sectors exposed to carbon leakage.[35] The ambition is to stimulate the relevant developing country to continue its development in a less carbon-intensive direction and to reduce the problems related to leakage. Through the crediting target, it is possible for the country voluntary to reduce its emissions and gain financial support if it does better than the target. The reductions between the sectoral BAU emissions and the crediting threshold can be considered a mitigation contribution of the developing country resulting from the SCM.

With reference to the electricity sector, which makes a large and rapidly growing contribution to the total greenhouse gas (GHG) emissions from developing countries, the SCM instrument is presented as one way of overcoming weaknesses of the current CDM and encouraging structural changes and significant reductions of CO_2 emissions in carbon-intensive sectors in developing countries.[36] The idea is to set a non-binding target below the emission level estimated for a BAU scenario on a national level. The target has to be decided on the basis of the national emission intensities of the relevant sector in the relevant developing country. It has been argued that respect for the CBDR principle can be ensured by a reframed SCM that only covers the energy sector.[37] Combining CBDR with meaningful participation in a global cap-and-trade system through sector targets for developing countries is one of the important and promising discussions on the future regime and future instruments.

There are two main differences between the CDM and SCM. The first is that the CDM typically applies to a single project, which is usually related to a single installation, whereas SCM would cover an entire sector. The second is that the CERs are additional to the emissions that would have occurred in the absence of the CDM-project, while the SCM would credit reductions against the targets agreed by the relevant developing countries.[38] That is, the development of SCM-based cap-and-trade systems is to take place at the national level following national design choices. The EU has proposed that the new SCM is an interim step towards the development of a more comprehensive multi-sectoral cap-and-trade system in developing countries.[39]

The new SCM system has to be based on a difference, where the developed countries have to buy their allowances (an auctioning system) and the developing countries are granted a generous allocation, so that they can benefit from selling

the allowances.[40] An innovation/technology accelerator connected to such a system as part of the benchmarking system could thus be developed to reward companies that invest in technology that meets performance criteria and makes significant emission reductions or overachieves the benchmarks given those installations by giving them free allowances in addition to what could be expected from a normal implementation of benchmark rules. Redesigning of the market can also be related to setting stable prices[41] or price signals[42] to ensure the carbon market – such initiatives are not related to the CBDR.

Nevertheless, the discussion of sector and market-based regulatory instrument is a contentious matter because such instruments will bind the developing countries' industries, especially the industries in the emerging economies, to emission cuts. According to the World Business Council for Sustainable Development's Cement Sustainability Initiative, developing countries do not accept sectoral approaches because they fear that the systems will lead to back-door emission caps.[43] They argue that such obligations would be a violation of the CBDR-principle.

More positively, China sees the aim of voluntary cooperative sectoral approaches and sector-specific actions in the light of cooperation between parties at sectoral level as promoting the development, deployment and transfer of technologies. The CDBR principle is mentioned as one of the important principles supporting such technology cooperation focusing on the specific needs of specific sectors. Cooperation between inventors making it possible to advance technological progress is mandated by the CBDR principle.[44] Several parties have noted that the design of future instruments should be focused strictly on technology cooperation, addressing all stages of the technology cycle and all technologies that control, reduce or prevent GHG emissions. Others stress the importance of such an approach as part of NAMAs. Furthermore, for developing countries this process of identifying and implementing sector-specific actions should be flexible and determined by their national capabilities and development goals.[45]

Meanwhile, the NAMA pledges made by developing countries in response to the Copenhagen Accord in January 2010 are very diverse. Brazil is for example more explicit than China and Indonesia on the use of CDM (or SCM).[46] China has – with reference to Article 4.7 of the UNFCCC – pledged by use of voluntary measures to lower the carbon intensity of its GDP by 40% to 45% with respect to 2005 by 2020, and to increase the non-fossil share of primary energy consumption to 15%. It is unclear to what extent China sees the flexible mechanisms (such as CDM) as part of the instruments to achieve these objectives.[47] Brazil has pledged emission reductions of 36% to 38,9% with respect to BAU. The measures described in the notification are voluntary and will be implemented in accordance with Article 4, 10 and 12 (including references to financing and technology transfer from developed countries) of the UNFCCC.[48] India, which has pledged to reduce by 2020 the emission intensity of its GDP by 20-25% with respect to 2005 levels, also refers to the Articles in the UNFCCC that are based on the CBDR.[49] And South Africa has pledged a 34% reduction from its BAU trajectory by 2020 and 42% reduction below BAU by 2025.[50]

The Copenhagen Accord, Article 5, ensures the first steps towards measurement, reporting and verification of these NAMA-based mitigation actions and GHG accounting of initiatives made by the developing country that are financially supported by UNFCCC financial mechanisms.

Financial support for technology development and transfer remains another important aspect of CBDR. The Accord, as mentioned above in Part 3, will be a guide for multilateral as well as bilateral technical assistance programmes. Such programmes can play a role in the transfer of technology by use of CDM and SCM projects.[51] A significant part of the funds from the developed countries will come from the Copenhagen Green Climate Fund established by Article 10 of the Accord. It will support projects, programmes, policies and other activities in developing countries related to mitigation, including technology development and transfer not based on CDM or SCM projects.

6. Discussion of intellectual property rights

Intellectual property rights (IPR) have long been a tool to promote innovation and the dissemination of new ideas and inventions in developed countries. On the other hand, IPR can be a hindrance as well as a stimulus to technology transfer.[52] The issue of protecting IPR is actually one of the most controversial in the discussion of the post-2012 regime. In the discussion, the broad scope or level of protection of IPR is seen by the developing countries as a barrier to their development. In the AWG-LCA, these countries stress the view that the protection of IPR acts as an impediment to the acquisition of new technologies and innovations in their countries, and consequently is not in harmony with the CBDR principle. Most developed countries, including the EU and the US, disagree with this assessment, and announced before the COP15 in December 2009 that IPR issues should not be on the agenda. IPR are, consequently, absent from the wording of the Copenhagen Accord. [53]

The issue is not a simple as the political positions in the AWG-LCA make it out to be. It is predominately private companies in the developed countries that retain IPR rights in various technologies. If a developing country is seeking to attract more financial support and promoting development, e.g. by taking part in CDM projects, it needs to solve many difficult problems related to investment climate, efficient governance, market size and infrastructure before dealing with the IPR issue. Strong IP protection creates in some situations a fundamental asymmetry between the donor country and the host country, with the result that for LDCs in particular the technology transfer might not stimulate local innovation and entrepreneurship.[54]

Other observers point to non-IPR factors as being the real issues of economic importance for the future development of the developing countries. They argue that in many cases standard cost-benefit calculations about new investments or shortages of capital, not IPR questions, are the main impediments to adopting sustainable technologies such as energy efficiency improvements. For example, for the energy-intensive iron and steel industry, a comprehensive catalog of "best practices" and technologies for cost-saving energy efficiency improvements is publicly available on the Internet[55] - and not protected by IPR - yet the diffusion of these technologies is slow due to other factors.[56]

As a way out of the conflict on the IPR issue some have suggested not to lessen the IPR protection as such but to grant free or low cost licenses on certain technologies for a set period to develop the LDCs.[57] The cost of access to technologies by developing countries could also be subsidized in specific circumstances, for example when overlapping patents on complementary components and inputs makes transaction costs very high. Such an approach has been presented by OECD.[58]

To date, the polarized debate among governments about IPR and sustainable technologies continues. That debate, of course, is embedded within the larger climate policy debate in which CBDR is repeatedly invoked. So we end with a question: Are the constant references to CBDR in multiple contexts—mitigation, adaptation, technology transfer, financial support—becoming an obstacle to meaningful proposals and negotiations toward a post-2012 international climate framework?

From the documentary record, at least, it appears that the countries that could most benefit from technology transfer are also the ones that are consistently refusing, on CBDR principles, to accept any mitigation obligations. At the same time, these same countries are seeking IPR concessions from the Annex I Parties, who are shouldering the mitigation burden. Moreover, the lack of mitigation obligations by developing countries creates a gap in private market incentives for the installation of sustainable energy and other sustainable technologies. The one existing bridge across that gap, the CDM, has significant distributional problems, however, because the countries that could benefit most from project-based technology transfer are also the ones that are the least attractive to developed-country owners of transferable technology, especially technology covered by one or more IPRs. Sectoral initiatives such as SCMs are intended to work around these conflicts over CBDR, but they carry with them the risk, or the promise (depending on one's point of view) that developing countries will need to undertake some mitigation commitments to make these programs successful. To get to that point will require new legal modalities and, above all, new ways of constructing the meaning of the "common but differentiated responsibilities" of all members of the world community.

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[1] Decision 1/CP.13 Bali Action Plan, doc. FCCC/CP/2007/6/Add.1*, December 15, 2007.

[2] UN Doc. FCCC/CP/2009/L.7, 18 December 2009. The Conference of the Parties "[took] note of" the Accord. Decision 2/CP.15, FCCC/CP/2009/11/Add. 1, 30 March 2010.

[3] Useful analyses of CBDR with some linkage to climate change include: Christopher D. Stone, *Common but Differentiated Responsibilities in International Law*, 98 American Journal of International Law 276-301 (2004); Lavanya Rajamani, *The Principle of Common but Differentiated Responsibility and the Balance of Commitments under the Climate Regime*, 9(2) RECIEL 120-131 ((2000); Marie-Claire Cordonier Segger, Ashfaq Khalfan, Markus Gehring & Michelle Toering, *Prospects for Principles of International Sustainable Development Law after the WSSD: Common but Differentiated Responsibilities, Precaution and Participation*, 12(1) RECIEL 54-68 (2003); and Tuula Honkonen, *The Principle of Common but Differentiated Responsibility in Post-2012 Climate Negotiations*, 18(3) RECIEL 257-267 (2009).

[4] Opened for signature 4 June, 1992; entered into force 21March, 1994. Text available at http://unfccc.int/essential_background/convention/background/items/2853.php

[5] Christopher D. Stone, note 3 above, at 276, 279.

[6] John C. Dernbach, *Sustainable Development as a Framework for National Governance*, 49 Case Western Reserve Law Review, 1, 21 (1998).

[7] Marie-Claire Cordonier Segger, "Sustainable Development in International Law" in Bugge & Voigt (eds.), Sustainable Development in International and National Law, Europa Law Publishing 87, 169-170 (2008); Tuula Kolari, "The Principle of Common but Differentiated Responsibilities as Contributing to Sustainable Development through Multilateral Environmental Agreements", *id.* at 251-267; Christina Voigt, "Climate Change and the Mandate of Sustainable Development: Observations from a Legal Perspective", *id.* at 547, 558-565; Philippe Sands, "Principles of International Environmental Law, Cambridge (2. Edition), 2003, pp. 357-390 and Dernbach, op cit. note 6, at 14.

[8] See David Freestone, *Introduction: The UN Framework Convention on Climate Change, the Kyoto Protocol and the Kyoto Mechanisms*, in David Freestone and Charlotte Streck (eds.), Legal Aspects of Implementing the Kyoto Protocol Mechanisms; Making Kyoto Work, at 5 (Oxford, 2005).

[9] Declaration of the United Nations Conference on the Human Environment (Stockholm), 16 June 1972, A/CONF.151/26 (Vol. I).

[10] Katia Karousakis, Bruno Guay and Cédric Philibert, Differentiating Countries in Terms of Mitigation Commitments, Actions and Support, OECD/IEA Doc. No. COM/ENV/EPOC/IEA/SLT(2008)2, at 15-17.

[11] Vito de Lucia, Common but differentiated responsibility, in The Encyclopedia of Earth, http://www.eoearth.org/article/Common_but_differentiated_responsibility; L. Rajamani, note 3 above, at 122-124.

[12] Decisions Adopted by the Conference of the Parties, Decision 1/CP.1, U.N. Doc. FCCC/CP/1995/7/Add.1.

[13] *Id.* at Para. 1(c).

[14] *Id.* at Para. 1(d).

[15] Cordonier-Segger et al., note 3 above, at 57-58.

[16] Note 2 above.

[17] Concerning the challenges in relation to technology transfer, cf. Dominique Foray, *Technology Transfer in the TRIPS Age: The Need for New Types of Partnerships between the Least Developed and Most Advanced Economies* (International Centre for Trade and Sustainable Development, 2008), http://ictsd.org/i/publications/50415/.

[18] Communication from the Government of Brazil to Yvo De Boer, 29 January 2010, available at http://unfccc.int/files/meetings/application/pdf/brazilcphaccord_app2.pdf.

[19] See for example FCCC/AWGLCA/2008/CPR.4 of August 25, 2008, Report on the workshop on cooperative sectoral approaches and sector-specific actions, in order to enhance implementation of Article 4, paragraph 1(c) of the Convention. Most of the means are described in Ellen Margrethe "The future climate change regime for the COP15 agenda", in Environmental Liability, Lawtext Publishing, England, vol. 17, issue 2, s. 71-85 (2009).

[20] This can established by setting a cap on emissions, see the Commission staff working document SEC(2010) 650/2 accompanying *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Region, Analysis on options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage. Background information and analysis*. Part II, 2010, at 62.

[21] Proposed by the EU, see *Stepping up international Climate Finance: A European Blueprint for the Copenhagen Deal*, COM(2009) 475 final and the Commission Staff Working Document accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions, SEC(2009) 1172/2, September 2009; and Commission Staff Working Document SEC(2010) 650/2, note 20 above, at 8 and 12.

[22] Commission Staff Working Document SEC(2010) 650/2, note 20 above, at 5.

[23] Karousakis et al., note 10 above, at 30.

[24] Wathanyu Amatayakul, Göran Berndes and Joergen Fenhann, *Electricity sector no-lose targets in developing countries for post-2012: Assessment of emissions reduction and reduction credits*, UNEP Risø CD4CDM Working Paper Series, no. 6, at 2 (2008).

[25] Dominique Foray, note 17 above, at 4.

[26] Damilola Olawuyi paper delivered at Regulating Global Change conference, Sandbjerg, Denmark, May 2010 (on file with the authors).

[27] Michael Wara, *Measuring the Clean Development Mechanism's Performance and Potential*, 55 UCLA L. Rev. 1759, 2008.

[28] The International Energy Agency, *Sectoral Approaches in Electricity – Building Bridges to a Safe Climate*, 15 (2009).

[29] The continuing use of CDM in the second commitment period is clear from the Decision 3/CMP.1 on Modalities and Procedures for a Clean Development Mechanism, see Commission Staff Working Document SEC(2010) 650/2, note 20 above, at 89. The second commitment period starts 1 January 2013.

[30] The EU ETS Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community and Article 5.2 of Decision No. 406/2009/EC adopted jointly by the European Parliament and the

Council on the effort of Member States to reduce their GHG emission to meet the Community's GHG reduction commitments up to 2020.

[31] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *Towards a comprehensive climate change agreement in Copenhagen*, COM(2009) 39 final, at 11-12.

[32] The European Council of 10-11 December 2009 concluded that as part of a global and comprehensive agreement for the period beyond 2012, the EU reiterates its conditional offer to move to a 30% reduction by 2020 compared to 1990 levels provided that other developed countries undertake to achieve compatible emission reductions and that the economically more advanced developing countries make a contribution commensurate with their respective responsibilities and capabilities, cf. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *International climate policy post-Copenhagen: Acting now to reinvigorate global action on climate change*, COM(2010) 86 final, at 2. See also the Commission Staff Working Document SEC(2010) 650/2, note 20 above, at 7-12.

[33] Article 4.1 (c) covers all stages of technology cycle: development, application, transfer and diffusion.

[34] See for example FCCC/AWGLCA/2008/CPR.4 of August 25, 2008, Report on the workshop on cooperative sectoral approaches and sector-specific actions, in order to enhance implementation of Article 4, paragraph 1(c) of the Convention.

[35]Commission Staff Working Document SEC(2009) 1172/2 accompanying the Communication from to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *Stepping up international climate finance: A European blueprint for the Copenhagen deal*, at 9.

[36] Amatayakul et al., note 24 above, at 2-3.

[37] Meriem Hamdi-Cherif, Céline Guivarch and Philipp Quirion, *Sectoral targets for developing countries: Combining "Common but differentiated responsibilities" with "Meaningful participation"*, Fondazione Eni Enrico Mattei, 2010.

[38] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *Towards a comprehensive climate change agreement in Copenhagen*, COM(2009) 39 final, at 5-6; Commission Staff Working Document SEC(2009) 1172/2, note 35 above; Hamdi-Cherif et al., note 37 above.

[39] The Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *International climate policy post-Copenhagen: Acting now to reinvigorate global action on climate change*, COM(2010) 86 final, at 12.

[40] *Id.*

[41] Stable prices would eliminate the basic incentive for speculation and make investments more attractive for the private investors.

[42] Commission staff working document SEC(2010) 650/2, note 20 above, at 74-75 .

[43] ENDS Europe Daily, 5 November 2009.

[44] Estelle Derclaye, *Not only Innovation But Also Collaboration, Funding, Goodwill and Commitment: Which Role for Patent Laws in Post-Copenhagen Climate Action*, 9 John Marshall Review of Intellectual Property Law 161, 169-170 (2010).

[45] FCCC/AWGLCA/2008/CPR.4, note 19 above, at 2.

[46] Commission staff working document SEC(2010) 650/2, note 20 above, at 14-20.

[47] *Id.* at 14-16.

[48] *Id.* at 16-18.

[49] *Id.* at 18-19.

[50] South Africa, letter to Yvo de Boer, 29 January 2010, http://unfccc.int/files/meetings/application/pdf/southafricacphaccord_app2.pdf..

[51] Article 3 (financial support to adaptation) and Article 8 (financial support to mitigation) as well as Article 11 (the Technology Mechanisms) are based on the CBDR principle ensuring economic support from developed to developing countries.

[52] Foray, note 17 above.

[53] Derclaye, note 44 above, at 161.

[54] Foray, note 17 above, at 32-36.

[55] http://www.asiapacificpartnership.org/pdf/Projects/Steel/

SOACT-1-7-08.pdf. The handbook at that link was funded by the US government as part of the "Asia Pacific Partnership."

[56] InterAcademy Council, Lighting the Way: Toward a Sustainable Energy Future 28-30 (2007), available at http://www.interacademycouncil.net/Object.File/Master/12/063/2.%20Energy%20Demand%20and%20Efficiency.pdf .

[57] Derclaye, note 44 above, at 170.

[58] Mario Amano, *Policies to Tackle Climate Change and Promote Green Growth*, keynote address by deputy secretary general,OECD, to UNESCO Future Forum, 26 Oct. 2009, available at http://portal.unesco.org/en/ev.php-URL_ID=46786&URL_DO=DO_TOPIC&URL_SECTION=201.html.