

## **G-20 Experts Group on Climate Change Financing**

### **Expanding the Global Carbon Market and Driving Private Finance**

#### ***Purpose***

This paper has been prepared for the information of Finance Ministers and their officials, recognising that they will have an important role in considering the market and budgetary impacts of any UNFCCC agreement. It is not intended to replicate the negotiations currently taking place in the UNFCCC forum.

The purpose of this paper is to discuss the role of the global carbon market in facilitating the flow of private finance to the lowest-cost abatement opportunities and in supporting climate change mitigation. The global carbon market comprises the trade of broadly equivalent emissions units, whether created under domestic or international emissions management approaches. An effective global carbon market would establish a single global carbon price, allowing the trade of abatement opportunities internationally and facilitating abatement where it is of least cost. The paper assumes that a global carbon market will continue to be an important part of international climate change policy going forward, operating alongside public financing. The paper does not address the appropriateness of different domestic policy measures (such as emissions trading, carbon taxes or regulation) that may be used to achieve agreed emissions reductions targets. It should be noted that the choice of domestic policies and measures does not preclude participation in global carbon markets.

The paper does not explicitly address the issues of raising public finance or governance arrangements of public finance, as these issues will be covered in separate papers as part of the G-20 Experts Group process.

#### ***Executive Summary***

Economic growth and climate change mitigation can go together. The current financial crisis should not be allowed to undermine our determination to achieve the goal of a greener economy while still delivering on existing development priorities such as poverty alleviation and job creation goals. Finance Ministers and Central Bank Governors have a pivotal role in creating the right enabling framework to attract the private sector investment needed to address climate change and to facilitate public financing when needed. The G-20 has agreed that it can provide constructive input to complement the work of the UNFCCC process and to support a successful outcome in Copenhagen 2009. Accordingly, the G-20 has tasked the Expert Group on Climate Change Financing to provide discussion of issues and options on the topic of Expanding the Global Carbon Market and Driving Private Finance.

The paper provides a comprehensive outline for discussion by Finance Ministers and Central Bank Governors for incorporation in the overall climate change report for Leaders at the Pittsburgh Summit. This document also suggests a series of principles for the G-20 to adopt.

#### **Principles**

1. Global carbon markets that put a price on emissions are a central vehicle to mobilise a significant and sustained flow of capital in support of low-carbon activities.
2. A commitment to an ambitious global mitigation goal will drive demand for emissions permits and facilitate more rapid development towards a deeper and more liquid global carbon market.

3. The expansion and reform of market mechanisms is crucial to the ability of the global carbon market to support Principle 1 and to provide incentives and resources for developing country mitigation actions or commitments.
4. An effective internationally integrated, credible global carbon market also requires low transaction costs and minimal distortions. Effective measurement, reporting and international verification of emissions reductions will be crucial in promoting environmental integrity and market credibility.

### **Recommendations**

G-20 countries should:

1. Endorse the role of the global carbon market in supporting deeper mitigation commitments or actions, encouraging carbon related investment, facilitating least-cost abatement and providing incentives for the development and diffusion of low-carbon technologies.
2. Encourage open and flexible trade between current and proposed domestic emissions mitigation management approaches, subject to broad equivalency of emissions units.
3. Support the reform of the existing Kyoto flexibility mechanisms to expand the global carbon market as a vehicle for facilitating significant financial flows between developed and developing countries and supporting the transformation to a lower carbon, climate-resilient future.
4. Acknowledge that there are a range of new mechanisms that provide options to expand the ability of the global carbon market to support mitigation commitments and actions and mobilise greater amounts of capital flows to low-carbon activities, which could involve the development of new mechanisms, including:
  - i) Sectoral crediting and sectoral trading; and
  - ii) Nationally Appropriate Mitigation Action (NAMAs) crediting.
5. Recognise that the operation of any proposed new mechanisms should, where possible, (i) enhance incentives for developed countries to actively pursue and achieve emissions reductions, including domestically; and (ii) strengthen global mitigation efforts to contribute to net emission reductions.
6. Recognise the importance of the institutional implications and regulatory challenges in the implementation of new mechanisms in a future climate change agreement, particularly the need to establish robust monitoring, reporting and verification mechanisms.
7. Recognise the need to build the capacity and market readiness of developing countries to access the global carbon market.

***Introduction: The role of the global carbon market in delivering finance and supporting climate change mitigation***

1. As countries progress towards negotiations at Copenhagen, it will be important to build a shared understanding of the role that climate change finance can play as a catalyst to re-orient public investments and provide incentives to maximise private sector investments in the transformation to a lower carbon, climate-resilient future.
2. Ambitious mitigation targets will provide a price signal driving structural change in the economy by increasing the cost of more emissions intensive goods and processes and encouraging the development and use of low-emissions technologies and processes. This price signal can either be explicit (through a market instrument such as a trading scheme or tax) or implicit (through, for example, regulation). Explicit price signals through market instruments provide a clearer price signal and a lower cost outcome because they allow businesses and consumers to choose the most cost-effective options. A price signal directly engages the private sector and affects investment choices, by making emissions intensive goods and services more expensive and changing what consumers demand and industry produces. The global carbon market will be stronger the more ambitious mitigation targets are and the broader the market is.
3. An internationally integrated carbon market, supported by complementary measures to address market failures, will provide for cost-effective mitigation by allowing mitigation to occur at least cost through the trade in equivalent units. Domestic, regional and sectoral trading schemes can facilitate the flow of financing through international linking and by allowing eligible international units to be accepted under such schemes. They can also directly engage private entities by allowing them to directly trade in eligible units to meet their obligations.
4. This paper discusses the role of the global carbon market as a vehicle for facilitating significant financial flows between developed and developing countries to support the transformation to a lower carbon, climate resilient future. Limits on imports of units in regional and domestic schemes and trade restrictions will operate as a limit on these financial flows.
5. Together, linked domestic schemes, reformed flexibility mechanisms and new mechanisms to support developing country mitigation action provide the opportunity to further enhance the global carbon market. The global carbon market has the potential to mobilise a significant and sustained flow of capital in support of low-carbon activities.
6. International trade in emissions reductions units provides an efficient and low-cost means of allocating private and public resources towards reaching emission constraints by allowing countries to access cost-effective reductions. Finance and investment is likely to flow through carbon markets from developed to developing countries given that developing countries are estimated to have more than two-thirds of the low-cost abatement opportunities. Australian Treasury modelling projects that, in the context of global action to stabilise greenhouse gases between 450 and 550 parts per million (ppm), the value of private sector flows from developed to developing countries could grow to 0.15-0.31 per cent of aggregate developing countries' GDP in 2020, around US\$79-161 billion (in 2005 dollar terms) in 2020.<sup>1</sup> The cap-

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<sup>1</sup> Commonwealth of Australia, 2008. *Australia's Low Pollution Future: The Economics of Climate Change Mitigation*. <http://www.treasury.gov.au/lowpollutionfuture/>

and-trade bill recently passed by the US House of Representatives and currently being considered by the US Senate has the potential by itself to create over US\$10 billion in primary offset market value as early as 2012.

7. To achieve the scale of mitigation needed and to ensure the required financing is generated fairly, effectively and efficiently, all countries – developed and developing – will need to draw on a range of sources and mechanisms. Well functioning global carbon markets are crucial to achieving the scale of mitigation required, as well as ensuring mitigation is cost effective and fair. The appropriate mix of financing – public and private, domestic and international – will evolve over time and differ between countries depending on their stage of development.
8. An effective internationally integrated, credible global carbon market also requires low transaction costs and minimal distortions. Effective measurement, reporting and international verification of emissions reductions will be crucial in promoting environmental integrity and market credibility.

#### **Recommendations:**

1. Endorse the role of the global carbon market in supporting deeper mitigation commitments or actions, encouraging carbon related investment, facilitating least-cost abatement and providing incentives for the development and diffusion of low-carbon technologies.
2. Encourage open and flexible trade between current and proposed domestic emissions mitigation management approaches, subject to broad equivalency of emissions units.

#### ***Expanding the carbon market***

9. As part of the Kyoto Protocol, a majority of developed countries have taken on binding emissions reductions targets. To facilitate meeting these targets, a number of countries have implemented or proposed cap and trade emissions trading schemes. The European Union's emissions trading scheme (EU ETS) commenced in 2005 and now covers the 27 Member States of the European Union plus Iceland, Liechtenstein and Norway, under which participants are required annually to surrender emission allowances equal to their emissions in the previous year. The United States, New Zealand, Australia and the Republic of Korea and have all proposed or are reviewing the introduction of cap and trade emissions trading schemes, while Japan has a voluntary trial scheme.
10. Agreement to ambitious mitigation reduction targets at Copenhagen and the implementation of domestic emissions reductions policies will drive demand for Kyoto offset mechanisms such as the Clean Development Mechanism. Greater demand will drive investment incentives in all countries to find cheaper abatement alternatives — facilitating financial flows and technology transfer.
11. Going forward, more stringent emissions reduction targets, and the adoption of market mechanisms to meet these targets, can provide more opportunities for developing countries to participate in the carbon market and assist the transformation of economies to a low-carbon future.
12. As stated previously, emissions reduction targets will drive demand for emissions reduction permits and facilitate increased financial flows to developing countries. This could provide a

more reliable flow of financial resources than will be provided by direct government outlays, which are at the discretion of individual country budget and bureaucratic processes.

13. The development of regional and domestic emission trading schemes and Kyoto mechanisms to date have shown that carbon markets can and do facilitate financial flows and technology diffusion and deployment in a cost effective manner (although the current mechanisms have not achieved their potential).
14. A start has been made on carbon trading between countries, including with developing countries via the Clean Development Mechanism<sup>2</sup>. While each of us can identify opportunities for improvement to the Kyoto flexibility mechanisms, the existing mechanisms have shown us that multilateral market mechanisms can work. Indeed, after the EU emissions trading system (EU ETS), the CDM market is the second largest carbon market in the world.
15. In total, the global carbon market was worth an estimated US\$126 billion in 2008. The world's carbon market exchanged 4.8 Gt CO<sub>2</sub>-e in the course of 2008, which is up 65 per cent on 2007, when 2.9 Gt CO<sub>2</sub>-e was traded. Of this, Primary CDM transactions were valued at an estimated \$6.5 billion in 2008, down from \$7.4 billion in 2007. Secondary CDM transactions were worth \$26 billion.
16. Carbon market volumes have increased by an average 61 per cent per year between 2005 to 2008.<sup>3</sup> The strong growth in this market primarily comes from the introduction of the EU ETS in 2005, which grew on average by 76 per cent per year since commencement.
17. The existing international carbon market is largely based on the first commitment period of the Kyoto Protocol (2008-12) and is dominated by the EU ETS and the CDM. For example, the EU ETS currently contributes the largest share towards the allocation based market, with over three billion units of EU allowances spot, future and option contracts traded for a variety of purposes, including compliance, risk management and arbitrage.
18. An effective outcome to the negotiations at COP-15 in Copenhagen in December will require deeper mitigation commitments or actions. Developing country Parties that choose to take on mitigation actions should be able to benefit by participating in market mechanisms, just as developed countries do now. These new commitments, actions and mechanisms would result in a significant increase in demand for permits and result in an expansion of the carbon market. Given that two thirds of low cost abatement is estimated to be located in developing countries, carbon markets could also see a substantial flow of finance from developed countries to developing countries.
19. There are a range of approaches that can be used to expand the ability of the global carbon market to support mitigation commitments and actions and mobilise greater amounts of capital flows to low-carbon activities. The expansion can be thought of as a stepped approach to a fully fledged global carbon market, from:

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<sup>2</sup> The Clean Development Mechanism (CDM) allows emission reduction or removal projects in developing countries to generate credits (known as "certified emissions reduction units" or CERs). Each CER represents emissions reduction of one tonne of CO<sub>2</sub> equivalent, and is based on differences between an estimated baseline (expected 'business as usual' emissions) and actual emissions. CERs can be used for compliance by developed countries that have emissions reduction targets under the Kyoto Protocol to meet their targets and support sustainable development in the host developing country. The mechanism does not, however, lead to a net increase in global abatement as the use of each CER replaces a developed country reduction with a reduction in a developing country.

<sup>3</sup> This is consistent with analysis undertaken by the World Bank and Point Carbon.

- 19.1. reforms to the CDM in the immediate term, to
  - 19.2. the development of new mechanisms such as sectoral trading and crediting or other approaches such as crediting for defined actions and outcomes in the short- to medium-term, to
  - 19.3. more ambitious economy-wide mitigation commitments or actions over time, and finally
  - 19.4. a fully fledged international carbon market consisting of both multilateral market mechanisms and linked domestic and regional mechanisms.
20. These steps should not be thought of as a linear progression towards a comprehensive global carbon market, but as a number of approaches that can operate concurrently to support increasingly ambitious mitigation actions. They are not mutually exclusive. Further, countries at different stages of development and with different capacities will adopt different approaches. However, countries would not be able to double count emissions reductions. For example, projects in a sector subject to a sectoral target/crediting baseline would not be eligible for project-based CDM credits.

#### *Flexibility mechanisms*

21. Internationally, the Kyoto Protocol flexibility mechanisms have been a successful tool for involving both developing countries and the private sector in mitigation activities.
22. CDM credits from developing countries have been used by governments and business in developed countries to meet part of their emissions reduction commitment at a reduced cost, and to some extent successfully mobilised finance for developing countries in climate change mitigation activities as well as assisting the development of a low-emissions technology base in some areas. These, however don't impact net mitigation effort as they are used purely as an offset mechanism. This early engagement through the CDM can minimise the costs to developing countries of mitigation in the long run, through access to technology and investment that avoids locking-in an emissions-intensive development pathway. Despite operating under restricted supply and more limited demand than expected under a future agreement, the CDM has grown to be the second largest carbon market and has helped shape standards for carbon offsets.
23. CDM projects have been concentrated in sectors where emissions reductions are relatively low cost and simple to measure because it is easier for these projects to qualify through the CDM approvals process. For example, there have been many CDM projects in the industrial and power generation sectors and, to a lesser extent, waste (mostly landfill gas capture). There have been far fewer projects in sectors where emissions are from more diffuse activities, such as building, transport, forestry and agriculture sectors.<sup>4</sup>
24. The geographic distribution of CDM projects is concentrated in particular countries. Latin America and Asia currently account for 94 per cent of credits generated from CDM projects. Throughout the short history of the CDM, China, as would be expected as a large source of emissions, has consistently generated the largest share of credits, followed by India.

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<sup>4</sup> Carbon Trust, 2009: *Global Carbon Mechanisms: Emerging Lessons and Implications*. This report draws on research from *Climate Strategies*, page 61.

**Table: Certified emission reduction (CER) units by region, in the CDM Market**

	2005	2007	2009 to date
	Per cent	Per cent	Per cent
Latin America	25	8	6
Asia & Pacific	14	10	13
China	37	69	58
India	20	9	17
Europe and Central Asia	0	2	2
Africa	4	1	4
Middle-East	0	1	0
Total	604,486	635,074	202,860

Source: UNEP Rise Centre, CDM Pipeline Analysis and Database, <http://cdmpipeline.org/cdm-projects-region.htm>

Note: A CER unit represents one tonne of CO<sub>2</sub> equivalent reduced.

25. To date, the volume of JI<sup>5</sup> activity has been significantly lower than CDM activity. Most of the units in the JI market are generated by methane reduction projects and Russia currently accounts for 60 per cent of units generated in the JI market.

**Total: Emission reduction units (ERU) by region, in the JI Market**

	2007	2009 to date
	Per cent	Per cent
Russia	43	59
Ukraine	39	7
Eastern Europe	14	22
Others	4	12
Total	116,665	15,461

Source: UNEP Rise Centre, JP Pipeline Analysis and Database, <http://cdmpipeline.org/cdm-projects-region.htm>

Note: An ERU represents one tonne of CO<sub>2</sub> equivalent reduced.

26. There are a number of capacity constraints on the existing global carbon market that will need to be addressed to allow the market to support the scale-up of mitigation activity required to tackle climate change. First, as “bottom-up” project-based mechanisms, CDM and JI lack the ability to create the incentives needed to stimulate the necessary technology shifts required to drive whole-of-economy change.
27. Secondly, the CDM has largely targeted emission reductions from single point sources and has therefore not captured mitigation potential in carbon-intensive but diffuse sectors such as transport and infrastructure. Analysis by the Australian Treasury suggests that currently the CDM captures only a small share of the mitigation potential in developing countries.<sup>6</sup> Given the focus of the CDM on emissions reductions, it is to be expected that CDM projects will be concentrated in areas where there is significant mitigation potential. Consistent with this, to date CDM projects have been limited in their geographical spread, concentrated primarily in

<sup>5</sup> Joint Implementation (JI) enables a developed country (with a Kyoto target) to carry out a “joint implementation” project with another developed country (that also has a Kyoto target) and earn “Emissions Reduction Units” (ERUs). ERUs can be used by developed countries to meet their Kyoto emissions reduction commitments. JI has both elements of international emissions trading and project-based forms of trading.

<sup>6</sup> Commonwealth of Australia, 2008. *Australia's Low Pollution Future: The Economics of Climate Change Mitigation*. <http://www.treasury.gov.au/lowpollutionfuture/>

China and India, with less than one per cent of projects taking place in the Least Developed Countries.

28. Thirdly, the environmental integrity of credits has been questioned, as it can be hard to determine whether the project is fully additional (i.e. the abatement would not have happened without the CDM).
29. Fourthly, approval of individual projects has been relatively slow and unpredictable, resulting in investor uncertainty. The governance and institutional arrangements, overseen by the CDM Board, are perceived to be ineffective, administratively complex and impose excessive transaction costs. The additionality test is also one of the most resource-intensive for both project developers and the CDM approvals process.
30. Finally, and more fundamentally, the CDM operates most often as a pure “offset” mechanism and does not make a net contribution to mitigation as the emissions reductions achieved in one country allow emissions to increase in another. Emissions growth in developing countries is likely to continue and an effective solution to climate change will require an increased participation of developing countries in mitigation efforts.
31. Improving and expanding the mechanisms in the post-2012 framework is a key element of an effective, efficient and fair post-2012 outcome and will be critical to achieving a well-functioning and comprehensive global carbon market.
32. Increasing the coverage of the market mechanisms will expand the abatement opportunities available to the market and therefore reduce the overall cost of climate change action. Expanding the sectors and activities covered by the market mechanisms and allowing for increased international trading will also open up opportunities in countries where there have been few CDM projects and potentially address regional distribution concerns.
33. A technology-neutral framework will allow the market greater flexibility to seek out cost effective abatement opportunities. It also allows host Parties the freedom to choose the technologies and activities that they consider to be most appropriate for their territories. Therefore, to the greatest extent possible, the international framework should resist prescribing or proscribing particular technologies or activities.
34. Reform of the governance and institutional structures of the CDM could facilitate an increased flow of project proposals. Appropriate governance arrangements need to balance encouraging broad participation with preserving environmental integrity and market credibility, and be streamlined into broader processes.
35. There are also a number of broader reforms that could potentially improve the efficiency of the carbon market. These include revising carry-over or banking restrictions on certain units and removing caps on the use of units generated from particular project activities. Allowing banking will improve the efficiency of the market by allowing abatement to occur at the time that imposes the lowest relative cost to the economy. Banking also provides an additional positive incentive to countries to over-achieve their targets.
36. The prospects for the CDM are difficult to predict because they depend on the reforms agreed in the current negotiations. Expanding the coverage of the CDM and improving its governance and institutional arrangements could significantly increase the flow of credits from the mechanism. Regardless, the CDM is expected to continue to grow in the near future. Based on the number of currently registered CDM projects it is estimated that 1.62 billion CERs will be generated by the end of 2012, which amounts to 1.6 Gt carbon dioxide

equivalent of emission reductions.<sup>7</sup> As the CDM requires little government involvement and capacity for its continued operation, the CDM is likely to remain an important mechanism for those developing countries not yet in a position to participate in market mechanisms which require increased government responsibility and capacity, such as sectoral market mechanisms.

*New mechanisms: sectoral and crediting approaches*

37. New mechanisms, such as sectoral market mechanisms for quantifiable mitigation actions, have the potential to increase the scope of the global carbon market. This could provide support and incentives for mitigation in developing countries beyond the levels currently possible using the CDM, and also contribute to global mitigation efforts. There are a number of ways in which both sectoral crediting and sectoral trading mechanisms could work effectively.
38. For example, under a sectoral crediting mechanism, a developing country could be credited for reductions below a previously-established “no-lose” emissions level. There would be no consequences if a country did not reduce its emissions below the emissions level. The emissions level could either be absolute or intensity based.
39. Under sectoral trading, the developing country could be issued units in line with its emissions level at the beginning of the trading period. At the end of the trading period, the country would be required to acquit units to meet its emissions level. If the country reduced emissions below its emissions level, it could sell or bank the surplus units.
40. Sectoral approaches could cover a range of sectors, including power generation and forestry. For example, there is a proposal (supported by Indonesia and Australia, among others) to include a market-based mechanism for reducing emissions from deforestation and forest degradation in developing countries (REDD) in the post-2012 framework (see Box 1).

**Box 1: REDD case study**

Currently, the CDM only covers a very limited number of land use, land-use change and forestry (LULUCF) activities (afforestation and reforestation). At the Bali Climate Change Conference, Parties to the UNFCCC agreed to discuss how to include reducing emissions from deforestation and forest degradation in developing countries (REDD) in a future international climate change agreement.

A number of countries, both developed and developing, agree that a market-based approach is required to leverage financing and investment on the scale needed to address the significant emissions from forests in developing countries. Financing from governments alone will not be sufficient.

The take up of forest project-based activities under the CDM has been very low. This is because of concerns about the large administrative burden associated with individual projects and credibility of emission reductions (particularly for permanence). Recognising these issues, a sectoral approach to forests in developing countries broadens the mitigation potential and addresses important issues such as intra-national

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<sup>7</sup> Point Carbon, <http://www.pointcarbon.com/news/1.1160018>

leakage and permanence of credits.

Under a proposed market-based REDD mechanism, developing countries would undertake to reduce emissions and increase greenhouse gas removals from forests relative to an agreed national forest emissions level. Credits would be generated for reductions from this forest emissions levels, and may be fungible with other credits in a global carbon market.

As with any international market mechanism, assurance in “REDD-credits” will be a base requirement to foster investor certainty and confidence. These requirements include institutional and methodological prerequisites, together with robust carbon accounting and monitoring systems. There may be need for public funding for capacity building to achieve the required governance and reporting arrangements.

41. Sectoral market mechanisms could give developing country governments better control of the generated credits/units and responsibility for achieving emissions reduction. Developing country governments could take an active role in choosing and encouraging mitigation policies appropriate for their national circumstances. They could also choose to undertake the least-cost mitigation activities in a particular sector as a “unilateral contribution” to mitigation and allow the carbon market to finance higher cost activities.
42. The domestic policies and measures implemented by a country to meet and go beyond the emissions level would be a choice for that country in accordance with its national circumstances. They might include domestic emissions trading schemes, carbon taxes, tax incentives or regulations. While the choice of policy instrument to meet these targets may impact the ability of domestic liable entities to participate in global markets, it will not limit government participation in markets and will not impact the total mitigation outcome.
  - 42.1. For example, a country may take on an emissions level in a sector that is 20 per cent below its projected baseline. It may choose to meet this sectoral emissions level through a regulation requiring a reduction of emissions by 30 per cent by all firms. The developing country government would then receive credits equal to the additional 10 per cent reduction that it achieved below its emissions level. The developing country government could choose to bank these units or devolve them to the entities operating in the sector or sell them and use the revenue however it chose (possibly to give to the companies operating in the sector or to invest in further mitigation activity). Another alternative would be for the developing country to set up an emissions trading scheme based on its mitigation emissions reduction level. Firms that do not reduce their emissions to the required level could be allowed to purchase permits through an international market to meet their commitment.
  - 42.2. The use of market-based policies and measures such as a carbon tax or emissions trading can have the advantage of raising additional revenue. Such revenue could be used to reduce other less efficient taxes in other areas of the economy. Alternatively, this revenue could be used to offset the income effect of higher prices especially for low-income households; to smooth the transition in high-emitting industries; and/or to support the development and use of low-emissions technologies and processes. The use of revenue for specific climate change purposes has been argued to result in a ‘double dividend’.

- 42.3. These considerations also apply to the interaction of mitigation policies with other existing policies and policy objectives. For example, removing energy subsidies (which can be seen as a negative carbon price) is a crucial part of the domestic response to the climate change challenge in many countries and can have the added benefit of reduced fiscal outlays. Impacts on the poor can be addressed through fiscal measures such as cash transfer programs, as successfully implemented by Indonesia.
43. The units generated from sectoral market mechanisms could be fully fungible with other units in the carbon market. Therefore robust measurement and international verification systems would be needed to ensure the environmental integrity of the units and provide market confidence.
- 43.1. Credits generated under a sectoral crediting mechanism would accrue to governments. These could then be traded amongst governments or alternatively, they could be sold to liable business entities participating in a trading scheme that allows the acquisition of such permits. As permits for a sectoral trading mechanism are distributed at the start of a commitment period, the trade of these sectoral permits could occur freely between businesses and governments.
44. Sectoral emissions levels could form a nationally appropriate mitigation commitment and action by developing countries. Sectoral market mechanisms could therefore move beyond the offset-based approach of the CDM to provide a net mitigation effect. This issue is integrally linked to the discussion on mitigation commitments and actions by developing countries in the UNFCCC.
45. By extending the reach of the carbon price, sectoral emissions levels could also potentially help to address concerns about competitiveness and leakage.
46. Another possible market mechanism could be a “NAMA (nationally appropriate mitigation action) crediting mechanism”. Such a mechanism would operate to provide market support for the implementation of NAMAs. A NAMA crediting mechanism could operate either by directly crediting quantified emissions reductions resulting from the implementation of policies and measures or as a sectoral crediting mechanism if credits were issued at the sectoral level to support the underlying NAMAs. Consideration of this form of crediting would depend on whether the emissions reductions resulting from the implementation of the policy concerned could be directly and robustly quantified.
47. Carbon credits for NAMAs could channel financial resources and technologies necessary for NAMAs which otherwise would not happen. For example, in the case where a developing country implements stricter fuel economy standards, the country would be provided as much carbon credit as emission reduction which occurs due to adoption of such policy. The amount of carbon credit granted would be decided by the difference between the baseline without the measures and the actual emissions when implementing the new standards, which are both measured by pre-determined methodology.
48. It is important to recognise that the operation of any proposed new mechanisms should, where possible, (i) enhance incentives for developed countries to actively pursue and achieve emissions reductions, including domestically; and (ii) strengthen global mitigation efforts to contribute to net emission reductions.<sup>[</sup>
49. Finally, it should be noted the implementation of new market mechanisms will require a strong and dedicated institutional framework, for instance for the definition of baselines, and be supported by robust monitoring, verifying and reporting methodologies. At the same time,

it will be essential to address in the future the challenge of regulating the global system which will be a key element of its robustness.

**Recommendations:**

3. Support the reform of the existing Kyoto flexibility mechanisms to expand the global carbon market as a vehicle for facilitating significant financial flows between developed and developing countries and supporting the transformation to a lower carbon, climate-resilient future.

4. Acknowledge that there are a range of new mechanisms that provide options to expand the ability of the global carbon market to support mitigation commitments and actions and mobilise greater amounts of capital flows to low-carbon activities, which could involve the development of new mechanisms, including:

i) Sectoral crediting and sectoral trading; and

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6. Recognise the importance of the institutional implications and regulatory challenges in the implementation of new mechanisms in a future climate change agreement, particularly the need to establish robust monitoring, reporting and verification mechanisms.

*Linking approaches in a global carbon market*

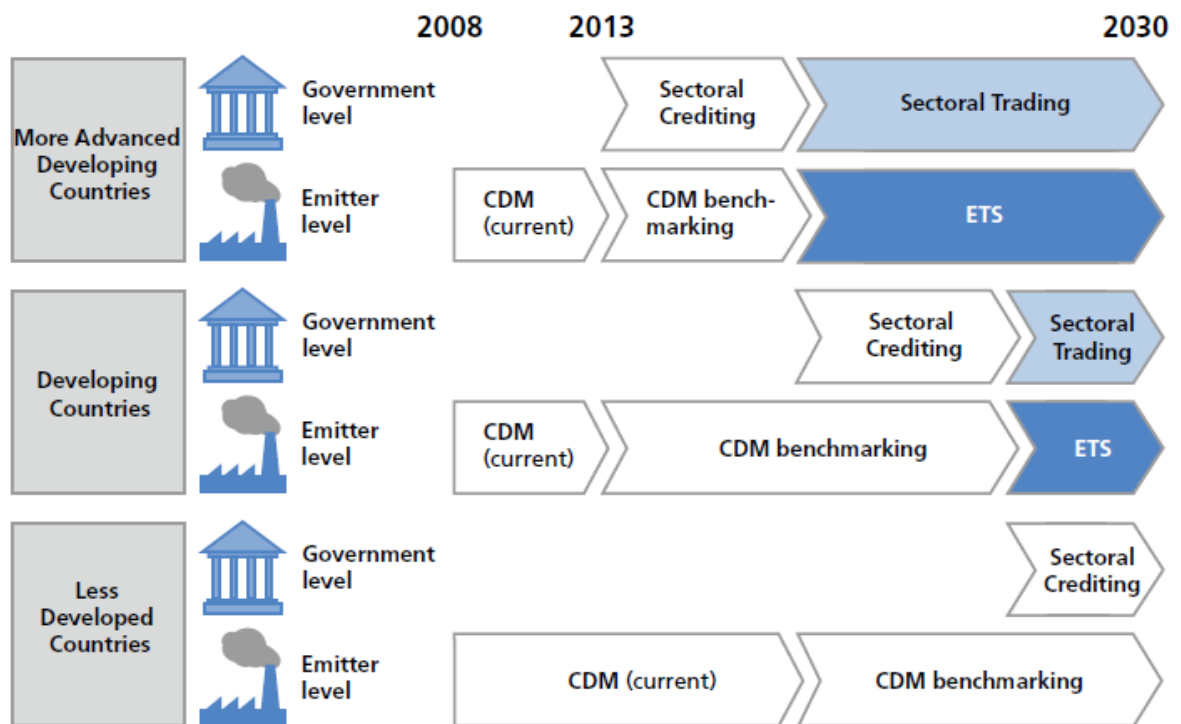
50. The linking of domestic schemes is vital to achieve a global carbon price which will allow the trade of abatement opportunities internationally and allow access to cheaper forms of abatement. The benefits of linking will be greatest where there are fewer restrictions on the scope of international linking. Without full, unrestricted international linking, different domestic schemes will face different carbon prices.

51. For example, Australia's emissions trading scheme, the Carbon Pollution Reduction Scheme, will allow liable entities to use eligible international units for compliance in the Scheme with no quantitative limitations. Given that developing countries have more than two thirds of the low-cost abatement opportunities, this has the advantage of allowing liable entities to gain access to low-cost abatement offsets that exist internationally. At the same time, engagement by developing countries in the carbon market can minimise their costs of mitigation in the long run, through access to technology and investment that avoids locking-in an emissions-intensive development pathway.

52. While there are clear economic benefits to both developed and developing countries of an international carbon price, there may be some political concern in accepting unlimited flows of low carbon investments. For example, if domestic participants do not face a sufficient price signal, the implementation of a domestic emission reduction mechanism is likely to be less successful in driving domestic technology change. In addition, consistent with the

principle of complementarity, countries should consider balancing their international offsetting with action to reduce emissions at home.

53. There is a need to recognise that countries are at different levels of development and as such, will be ready to use different mechanisms at different rates, in accordance with national circumstances and respective capabilities. It is likely that the ability of developing countries to access financing from the market will vary, depending on their ability to build carbon market institutions and the differences in the availability of abatement opportunities between countries.
54. For example, sectoral market mechanisms require a greater degree of government capacity and not all developing countries will be ready to access these mechanisms. Other countries, particularly least developed countries, are likely to rely on CDM-style mechanisms for some time in order to access international carbon markets. Small island developing states, in particular, may have limited ability to build carbon market readiness and limited abatement to sell. Reforms to the carbon market, such as expanding the coverage of the mechanisms may help to address this issue by expanding the opportunities for market engagement. Bilateral cooperation can also play a role in fostering carbon markets in developing countries.
55. In addition, within any one country, it is likely that a combination of the discussed approaches will be needed in order to allow the country to access the full benefits afforded by the carbon market. Sectoral approaches may initially be appropriate in sectors such as power generation or the forestry sector, while a reformed CDM mechanism might be appropriate in smaller and less advanced sectors.
56. Table 1 provides an illustrative example of how different types of developing countries might participate in different carbon market mechanisms at any given time, depending on their capacity. However, it should be noted that this is illustrative only. For example, for some less developed countries earlier participation in sectoral market mechanisms to address emissions from deforestation may be appropriate.

**Table 1: Possible expansion of the carbon market**

Source: UK Department of Energy and Climate Change, 2009.

57. The results of modelling undertaken by the United Kingdom Government suggest that the use of sectoral trading by developing countries could be around 30 per cent more cost effective for the world than sectoral crediting, which in turn could be around 35 per cent more cost effective than the current CDM. Furthermore, both sectoral trading and sectoral crediting can deliver greater amounts of global abatement with support from carbon markets compared with the production of CDM offset credits.<sup>8</sup>

### ***How public and private financing can be brought together to deliver a complementary approach to climate change financing***

58. To achieve the scale of funding – and mitigation – required, a range of sources will need to be utilised by public and private actors. This paper has focused on the role of global carbon markets in mobilising predominantly private sector finance. However, while global carbon markets will facilitate significant ongoing financial flows to support the transformation to a lower carbon, climate-resilient future, it should also be noted that well-targeted public finance should work to support the development and depth of the global carbon market.

59. The private sector will play the primary role in the functioning of the global carbon market. Public sector investment should be targeted to facilitate and strengthen private sector engagement and support the development of the carbon market — it should not crowd out private sector investment. Public finance will be needed to improve enabling environments for private sector engagement in markets – including institutional arrangements (such as

<sup>8</sup> UK Department of Energy and Climate Change, 2009.

secure property rights) and improved capacity and market readiness. This includes the technical capacity to measure and report emissions, as well as the expertise needed to develop and implement emission reduction policies.

60. While the issue of public financing more broadly will be examined in a separate paper to be prepared by the G-20 Experts Group on Climate Change Financing, it is important to note the interaction between public and private financing and the complementary role they can play in transforming economies to a low carbon, climate resilient future.

**Recommendation:**

7. Recognise the need to build the capacity and market readiness of developing countries to access the global carbon market.

DRAFT