



Establishing a Global Carbon Market

A discussion on linking
various approaches
to create a global market
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Carbon markets will need to play a leading role in guiding energy system investment towards an eventual zero emissions outcome. Further to this, a new international climate change framework is required to support a coherent approach at national level. Components could include:

- Establishing a quantifiable long-term (50-year) trajectory for the management of global greenhouse gas (GHG) emissions.
- Global cooperation to accelerate energy technology development and deployment and enable the rapid transfer of technology between nations.
- Mitigation action built progressively from local, national, sector or regional programs, each contributing to the long-term goal. This recognizes that energy and climate policy must, in the first instance, be set at national level.
- A global carbon market, allowing international trading between nations, sectors and projects, thereby introducing flexibility into the attainment of national and sector objectives.

This publication presents a discussion on the creation of the global carbon market.

Action to address climate change is already happening, and the pace at which initiatives are developing is increasing. Many initiatives are in response to national emissions objectives. Some are driven voluntarily by business.

A number of different emissions management approaches are being proposed, including economy-wide “cap-and-trade” systems, low-carbon fuel standards, national renewable energy obligations, energy efficiency targets, carbon taxes and technology standards. Each approach creates a (different) cost of carbon within its targeted sector or country, either explicitly through an allowance price or implicitly through the incremental cost of policy requirements.

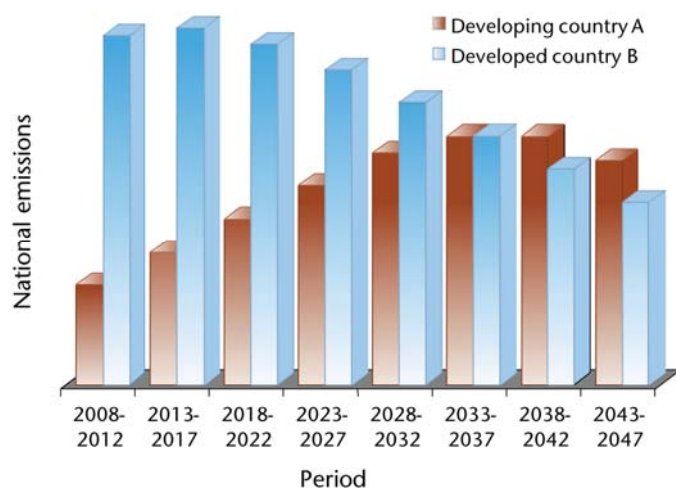


Figure 1 National emissions pathways

A key objective in creating a global carbon market is to link different emissions management approaches together, thus establishing a single carbon cost and creating equitable access to the prevailing lowest cost abatement opportunities.

However, such a global market is not a substitute for policies and instruments that are designed to promote strategic investments in technology development and to provide support for large-scale infrastructure investments.

The role of caps

The overall objective of climate mitigation policy is to manage global greenhouse gas emissions on an absolute basis, that is, tonnes of CO₂ (equivalent).

Within a global emissions target it must be recognized that some nations are still developing and their emissions will grow (with the potential to decline in the future) while other nations have the opportunity to see their emissions plateau and begin declining immediately (see Figure 1 for two countries of similar population). Nevertheless, every nation able to implement significant mitigation measures needs to structure its CO₂ emissions management program on an absolute basis for specific future periods, at least at the sector level where the mitigation opportunities lie.

Of course some nations are not yet in a position to begin absolute emissions management at all, but actions such as emissions reduction projects could be implemented.

Absolute emissions management is key to linking disparate national programs. However, individual programs need not be based on absolute emissions provided the national government is prepared to balance the national accounts. As such, there are two ways to cascade a national carbon budget into the economy:

One-for-one cascade

In this case there is a direct relationship between the allowance allocation at industry level within the economy and the national emissions target. The government has directly cascaded (part of) its target down into the economy, such as in the European Union’s Emissions Trading Scheme (EU-ETS).

Indirect cascade

This means that the government has established a mechanism to manage emissions within the economy that is not directly linked to the national target. For example, it may opt for a carbon tax or establish a “renewables obligation” in the power generation sector, which even when met does not guarantee a certain emissions outcome for the sector as a whole. However, such an approach does not negate the possibility of linking with other national programs.

Linking markets – basic approaches

Linkage occurs when one system recognizes the market instrument (e.g., allowance) operating within another system and allows its use to meet the compliance objective of the first system. For example, the EU-ETS recognizes the Clean Development Mechanism (CDM) and allows the use of Certified Emission Reduction units (CERs, the market instrument of the CDM) to meet the compliance requirement of a facility in the EU-ETS.

Unilateral recognition

A unilateral approach exists when one government recognizes the instrument of another and accepts it as legal tender. Recognition occurs frequently in monetary markets, with the US dollar widely recognized and accepted, even though it may not be the official currency of a particular nation.

In emissions markets, government recognition, even if unilateral, should be encouraged for the CDM, such that at the very least the CER remains the de-facto international unit of carbon trading. Establishing different project mechanisms to support various national systems is not only expensive from a transaction perspective, but could undermine the rigor needed to ensure project validity and environmental integrity.

Bilateral

A bilateral approach involves specific recognition between two parties. While a global market could be constructed through such an approach, the transaction costs will inevitably rise for participants. For example, if A recognizes B, and B also recognizes C, then in practice allowances from C will be transferable to A. But if A does not formally recognize C, then additional pass-through trades would need to be constructed, at additional cost.

Multilateral

A multilateral approach could develop either by agreeing to a standard set of rules that govern all applications of emissions management, or by the development of a global registry and common emissions management instrument that allows international trade to take place. While both require significant levels of agreement, the latter is likely to be more flexible in that individual approaches would only have to recognize the international registry and its rules.

Projects

As is the case with the CDM, projects form an essential part of the market. They encourage market participation across a broad spectrum, ranging from the poorest developing countries where economy-wide emissions management is simply not feasible or appropriate at this time, to the richest developed economies where conventional policy instruments may be impractical – e.g., “cap-and-trade” in the agricultural sector.

Project mechanism reduction units also offer a convenient international instrument for de facto linking.

How might it work?

A global agreement that leads to the “ideal” situation of a global cap with all nations participating in a single carbon market is an unlikely outcome of current processes.

Rather, a stepwise approach to this goal is more likely, through an arrangement that allows linkage between various national approaches. In such a model, signatories to an agreed global emissions trajectory develop national emissions management programs.

A signatory may then choose multilateral participation in the global carbon market by accepting, at the national or sector level, a fixed carbon emissions budget for a given future period in the form of tradable international allowances. The budget arises from the goals of the specific policy program(s) as a contribution to the global trajectory (see centrefold illustration)

Alternatively, a signatory may choose to begin the task of managing emissions without participating multilaterally, but instead engage in international trade through unilateral recognition of project mechanisms. In cases where national or sector programs are not forthcoming, the project mechanism(s) should a minimum contribution.

Participation in this model is not mandatory, but once in, participants must fulfil their commitments and meet their agreed emission budgets through the surrender of international allowances. Participation would always be dependent on a review of the carbon budget submission by an oversight body (see Box).

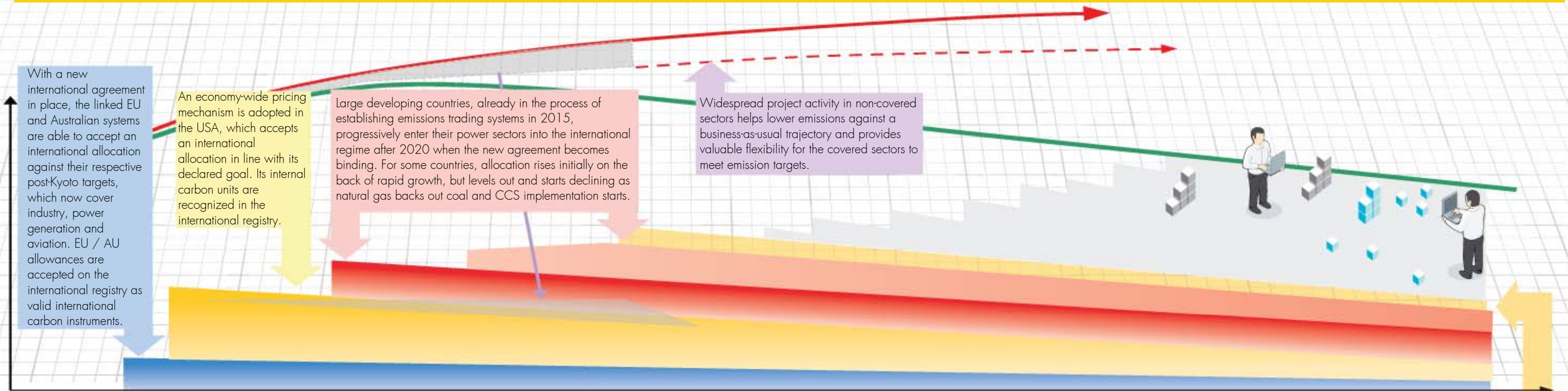
Going forward

A multilateral linking approach, combined with absolute national emissions targets and a robust project mechanism(s) is key to a global carbon market. Unilateral recognition of project mechanisms will also play a role.

The role of an oversight body in facilitating the development of a global market

1. Establishing the framework within which projects and national programs can link.
2. Creating the global carbon-trading instruments that will underpin the linkage process and issuing those instruments in response to submitted projects and programs (as per Assigned Amount Units (AAU) and CERs within the Kyoto Protocol).
3. Developing measurement, reporting and verification rules associated with the issuance of instruments and the later step of annual reconciliation.
4. Developing and issuing guidelines for the basic structure of national programs. Programs designed along similar lines will facilitate linkage.
5. Developing and operating the necessary international registries for linking (e.g., an expansion of the current International Transaction Log - ITL).
6. Governing the overall framework, including periodic reconciliation.
7. Assessing submissions for inclusion in the international framework.
8. Expanding and operating the project mechanism(s).

The figure illustrates one international market expansion scenario over time as different national and sector commitments are added and the projects mechanism grows in use. Initially the international market consists of the EU-ETS, the CDM and some national CER procurement. With the advent of "cap-and-trade" systems in countries such as Australia that also recognize the new international architecture, there is a rapid expansion of international trade. By 2015-2020, three major systems make up the international market, each shown with a declining emissions "wedge" equivalent to their respective system allowance allocations. The project mechanism is used extensively in the early years before big national abatement programs take over. Projects would be broad in nature and could include international sector-based efforts. Between 2020 and 2030 some sectors within large emerging economies have developed emissions management programs that can be added to the international framework. In the early years of these programs, emissions continue to rise, although strictly within allocated limits. Such programs may begin purchasing allowances from the international market to meet their own national compliance requirements, thus channeling capital from large developing countries back into the market, supplementing the flow that had traditionally come from developed countries. From 2030 onwards many new national and sector programs enter the system and the global carbon market rapidly expands. By 2045, most emissions are covered by the system.



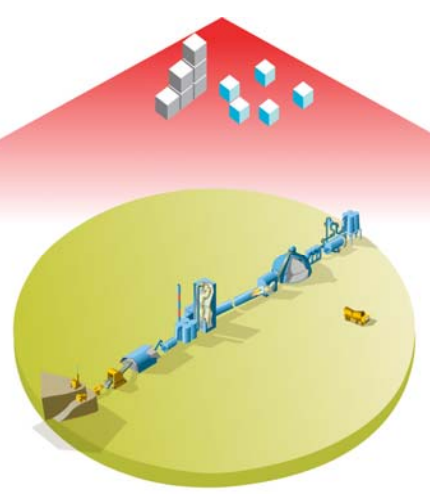
2015 2020 2025 2030 2035 2040 2045 2050



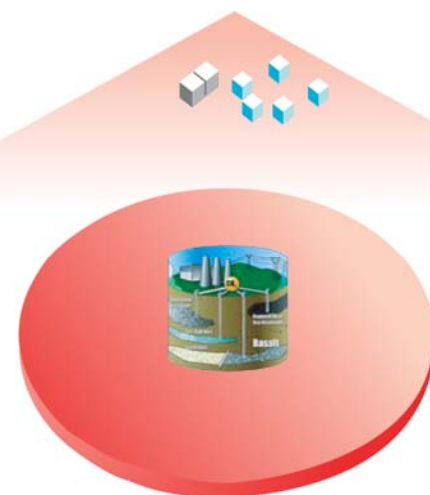
National Sector(s)



Whole economy



Industry sector (e.g. cement)



Projects (e.g. CCS)

This country implements a "baseline-and-credit" trading approach for its industry and power generation sectors. An international oversight body reviews the reduction plan and, as anticipated, offers an equivalent allocation of international units to the government. The national trading scheme credits are recognized on the international transaction registry. Industries set about meeting their targets, but in doing so become sellers as they outperform their intensity targets. Over time it transpires that the covered sector has emitted more than the national allocation, even though it has sold into the international market. This has happened because production was much higher than expected. The government must repurchase allowances from international markets to meet its obligations.

Key steps to participation in the international framework

1. With a global agreement in place that defines a long-term GHG emissions trajectory, national governments begin the task (or continue the task) of designing policy measures to manage emissions in their own economies, but with the specific goal of a tangible national contribution to the global trajectory.
2. Industry sectors affected by such policy measures look for the flexibility to manage emissions more widely and in particular seek access to reduction opportunities outside their national borders. This can only be realized by some form of international trade.
3. A national government seeks to be included in the international market and proposes that a sector covered by specific policy architecture (e.g., cap-and-trade) is allowed to participate. The budget (or cap) for the sector is exchanged for an equivalent international allowance allocation.
4. The international allocation is held by the national government, but an equivalent tradable instrument within the industry sector program is recognized on an international registry.
5. The national government recognizes any flow from the international registry as compliance units within its industry program.
6. At the periodic reconciliation for the international agreement, the national government ensures that sufficient allowances are in the international registry to cover the agreed emissions budget.

Key requirements for linking

Certain specific requirements must be met before different market-based approaches can be linked. Some are structural, in that without them the approaches are simply incompatible or create an allowance flow in one direction only. Others are required to give confidence that the approaches are broadly aligned in their goals.

A clear definition

The sector to which an emissions mitigation program pertains must be clearly defined, with an accepted measurement and reporting protocol in place that defines the current status or base situation. Ideally the sector should have a clear, documented and accessible emissions history. As the sector grows and changes, the definition must be robust enough to incorporate such change; otherwise leakage will occur as emissions migrate to other, potentially non-covered, sectors.

The carbon trading instruments used must have a uniform definition to ensure they will be fungible across jurisdictions and trading schemes.

A pathway forward

The sector must have a defined pathway forward, which can be translated into an absolute emissions change. In a rapidly developing economy emissions may rise in a specific sector, but overall emissions per unit of output should still fall.

Assessing an effective contribution

Most importantly, the emissions change for the sector must represent a real contribution to the international goal. Two key aspects within such an assessment include the rate of improvement in energy efficiency and the rate of emissions reduction.

For a developed economy, the improvements required should also result in an overall reduction in emissions. Within a developing economy, emissions may still rise even with significant improvements in these factors.

The four economies shown in the adjacent figure are converging in terms of energy efficiency and carbon emissions per unit of energy through to 2050, but Chinese emissions continue to rise, at least in the medium term. Longer term they plateau and then decline.

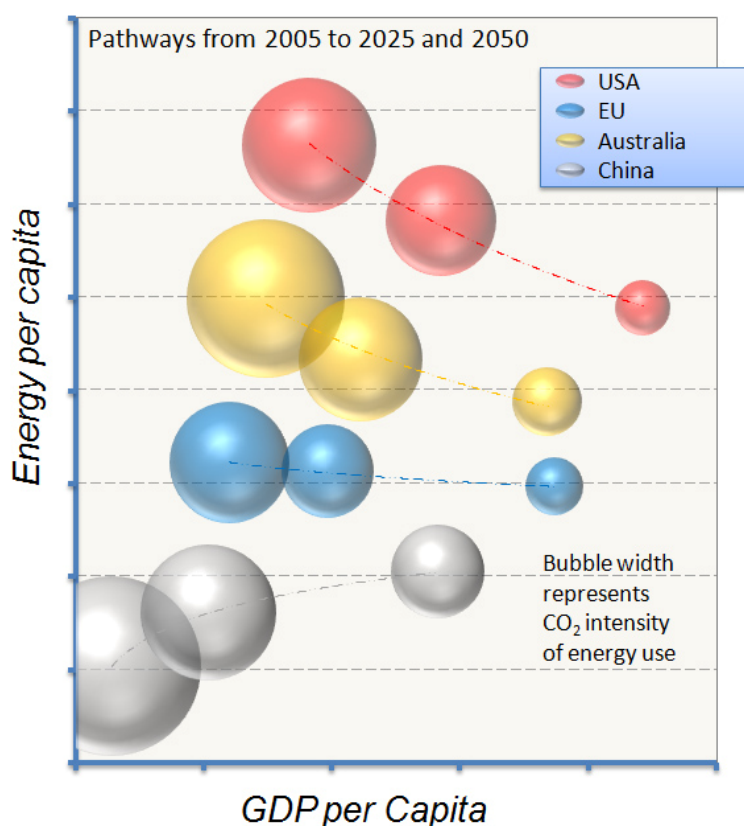


Figure 2 - Converging pathways for key countries

Similarly structured systems

In order to link systems, similar structural elements must exist. Important considerations include:

- Pricing measures: Despite their attraction in some places, price caps and price floors could undermine linking. A price floor in one system would effectively flow through to other systems once met, possibly necessitating the need for a trading gateway. This could further complicate system design and operation.
- Penalties: The penalties for non-compliance must be broadly similar in the linked systems. Each must require environmental make-up of any missed target (i.e., no buy out) in the next compliance period and any fines should be at a similar level.

- Banking and borrowing: Provisions for banking and borrowing should be similarly structured. Limits in one system would be bypassed by trading into a system where any limit in place had not been reached.
- Monitoring and reporting: The monitoring and reporting guidelines in each trading system should follow similar protocols.
- Linkage and offset policies: Ideally, linked systems should not impose any limits on trade flow (e.g., a limit on the percentage from linked systems that may be offered for compliance).
- Legal: An international set of accounting and verification principles, and common contracts.
- Allocation: Different approaches to allocation can exist across linked systems. Grandfathering may be offered in one system vs. auctioning in another. The allocation process does not directly impact trading and price behaviour.

Current carbon market linkages

Operational emission trading systems include the EU ETS, the California Cap-and-Trade Program, the Alberta Specified Gas Emitters Regulation, the Australian Carbon Pricing Mechanism (currently in a fixed price start-up phase) and the New Zealand ETS. But many other countries are also looking at market based approaches for their economies. Most notable are the developments in China, Korea and Mexico.

Linking between Australia and the EU ETS

Very recently the Australian Government and the European Commission announced that their respective emission trading systems would link up progressively over Phase III of the EU system, initiated by Australian entities participating in one way carbon allowance trading from 2015. This is a bold move by both parties and quite possibly one that will make others with nascent trading systems sit up and think about the future.

A full two-way link between the cap and trade systems will start no later than 1 July 2018. Under this arrangement businesses will be able to use carbon units from the Australian emissions trading scheme or the EU Emissions Trading System (EU ETS) for compliance under either system. To facilitate linking, the Australian government is making two changes to the design of the Australian carbon price:

- The price floor will not be implemented;
- A new sub-limit will apply for the use of eligible Kyoto units.

In recognition of these changes and while formal negotiations proceed towards a full two-way link, an interim link will be established enabling Australian businesses to use EU allowances to help meet liabilities under the Australian emissions trading scheme from 1 July 2015 until the full link is established.

Although both Australia and the EU have stressed that this is a bilateral arrangement, it must still be the case that the overarching Kyoto framework has helped this linkage – perhaps even allowed it happen. Thanks to the UNFCCC architecture, these two systems grew up with enough harmony to make a linkage possible. They “count” the same way, “track” the same way and “comply” the same way. Both the systems have common offset arrangements through CERs under the Kyoto Clean Development Mechanism and the units created under the Australian Carbon Farming Initiative are also Kyoto compliant. This means we have the makings of a linked system with global reach.

This linkage between the EU and Australian carbon markets, as well as other existing or potential linkages including EU–Norway, EU–Switzerland and California–Quebec is already part of the landscape in which the future international framework is being discussed.

One goal of a new international framework could be to provide sufficient tools, rules and mechanisms which countries can use in developing their carbon trading systems, thus facilitating linkage at a convenient time for interested participants. We hope that the on-going experience from the nations hosting these trading systems, together with the ideas outlined in this publication, can help inform the continuing debate on the development of carbon markets.

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