

**Policy organizational framework:** Given the scale of the global challenge to address climate change, allocation of resources as efficiently and effectively as possible is critical to creating the greatest progress. Curtailing emissions at the lowest cost per tonne, irrespective of where or in which sectors those abatements occur, is the most economically efficient approach. Such efforts, grouped by category, can be ordered by cost of the reduction on a per-tonne basis in a graphical representation (Exhibit 33), often referred to as a “marginal abatement cost curve,” or MACC.\*

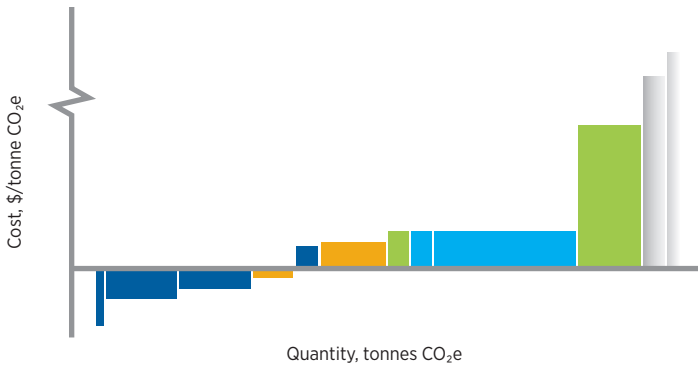
Each bar represents one category of mitigation opportunity. The height of each bar represents the cost of abatement, generally expressed in a cost per tonne of carbon dioxide-equivalent (CO<sub>2</sub>e), and the width of each bar represents the volume of abatement, usually in tonnes of CO<sub>2</sub>e. Generally, efficiency and some renewable-power applications are less costly than nature- and land-based reductions, which are generally less costly than CCUS and other technologies still in early development. Potential carbon reduction costs and volumes can also vary by geography or application.<sup>40</sup>

Many economists believe the most efficient way to achieve economywide emissions reduction is through a price on carbon.<sup>41</sup> We agree. Carbon pricing incentivizes reductions across the economy and investment in reduction technologies for the future. A price in the form of either a tax – which sets a price on emissions – or a cap-and-trade system – which sets the volume of emissions reduction – can incentivize solutions within a market-based framework, strengthening and compounding its comparative advantages over time (Exhibit 34). In addition, a carbon tax could raise revenue that may be invested or returned to impacted communities and consumers.

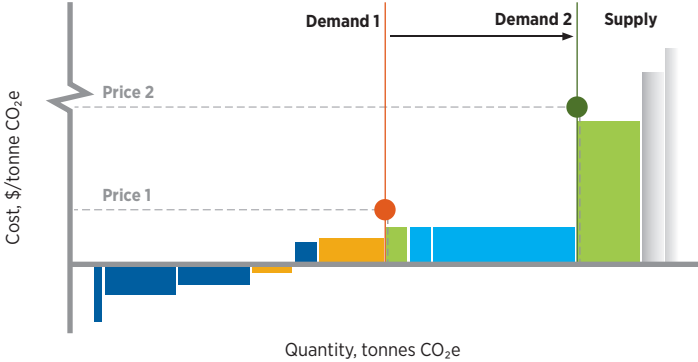
The wider the coverage of a price, the more opportunities to find carbon reductions. For example, for economies that are not members of the Organization for Economic Co-operation and Development (OECD), it is often less expensive to reduce emissions because investment may not have been made in more efficient technologies. By linking OECD and non-OECD economies, financing can be mobilized to incentivize reductions at the lowest cost. It is estimated that with global cooperation (e.g., through the Paris Agreement), reductions can be made at half the cost of an inefficient and unlinked system.<sup>42</sup>

Policies narrowly targeted at specific geographic regions, sectors or technologies are likely to miss the efficiencies of a comprehensive market-based system. The impact of a targeted approach may be a reordering of the MACC opportunities – by shifting a higher-cost activity to the left on the graph (Exhibit 35). This typically achieves less emissions reduction, at any given cost.

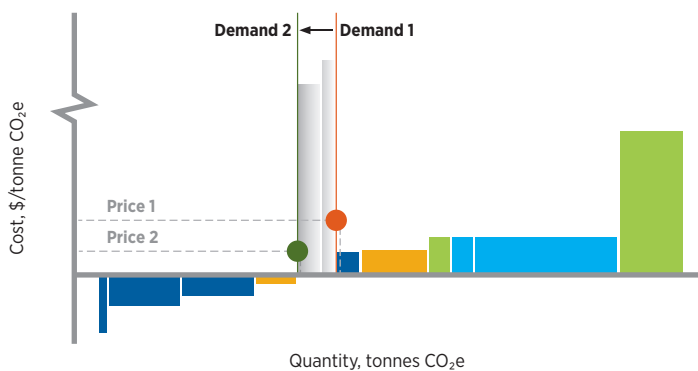
**Exhibit 33. A MACC can be a helpful organizational framework for policy analysis and abatement-potential analysis<sup>†</sup>**



**Exhibit 34. In markets with carbon pricing, the carbon cost often follows the cost of abatement in the market<sup>†</sup>**



**Exhibit 35. In markets with narrowly targeted policies, abatement opportunities may be reordered<sup>†</sup>**



- Efficiency, maintenance
- Renewable power
- CCUS
- Forestry, agriculture, waste management, industry
- Other technologies

<sup>†</sup>For illustration only. Not drawn to scale. Example of a marginal abatement cost curve; project ranking represents average prices, but specific projects within categories vary.

\*Construction of a MACC requires detailed understanding of a wide range of technologies and mitigation options across the various sectors of the economy. Numerous decisions are also necessary, such as the grouping of technologies and the choice of discount rate, which can affect both the volume and the cost calculations. MACCs should be taken as qualitative, rather than quantitative, representations of the costs and potential magnitudes of mitigation options unless done with facility- and project-specific information.