

McKinsey's greenhouse gas abatement cost curve – setting the record straight

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At the global climate change conference in Bali three years ago, the world began to face up to a core challenge - how to continue to grow in a way that could lift the next billion people above the poverty line while at the same time significantly reducing greenhouse gas (GHG) emissions. Governments, businesses, civil society and other stakeholder communities increasingly began to discuss how best to meet these two vital imperatives, and what trade-offs, if any, should be made between them.

They faced an immediate hurdle: the absence of a common language or methodology for quantifying and comparing the impact of different potential mitigating actions in different sectors and countries, and their associated costs.

At McKinsey & Company, we set out to address this gap by investing in a methodology which became known as the greenhouse gas abatement cost curve. Using the most reliable data available and extensive local expert involvement, the cost curve estimates the potential emissions reduction achievable from an extensive set of actions -- ranging from energy efficiency measures to avoided deforestation to new processing technologies in high-emitting industries -- and determines the cost of each action.

The global cost curve, initially published in January 2007, showed that it is possible to combine continued economic growth with dramatic reductions in GHG emissions, and that there is a huge potential opportunity to improve energy efficiency in the short term. It illustrated the critically important role of reduced deforestation and better land efficiency within the overall effort to reduce global carbon emissions. And it demonstrated that capturing emissions reductions sufficient to materially lessen the risk of catastrophic climate change would require the active involvement and contribution of both developed and developing nations.

Since 2007 more than 25 countries including Indonesia have used national cost curves to inform their decision making. Governments, alongside business leaders, investors and other stakeholders, have used the cost curve to underpin discussions on climate change, and as a key input into the development of low carbon economic growth strategies.

In Indonesia, a cost curve analysis developed by the National Council on Climate Change (DNPI) produced an additional set of insights. It provided analytical endorsement of President Yudhoyono's oft-stated declaration that Indonesia has the potential to play a critically important role in addressing the global climate change challenge. Second, it helped identify and measure a set

of abatement opportunities across the whole economy, particularly in the highest emitting sectors such as forestry, peat, energy, and transportation.

The cost curve framework has garnered its share of critics. Some dispute the accuracy of certain data assumptions used for individual mitigation initiatives, while others are concerned the cost curve underestimates the true costs of certain kinds of mitigation actions, especially those involving smallholder farmers. Others have misunderstood the purpose and methodological approach of the cost curve. Several of these criticisms were included in a recent briefing paper published by the non-governmental organization Rainforest Foundation U.K., entitled “McREDD: How McKinsey cost curves are distorting REDD”.

In addressing these concerns, it’s important to remember what the cost curve was designed to do: establish an objective and uniform set of data to inform climate change discussions among corporate leaders, academics, campaigners and policy makers. Analytically, it assesses - globally, nationally, or at the level of a region or a city - the potential volume and cost of specific initiatives for reducing greenhouse gas emissions: to put it another way, it establishes an inventory of abatement opportunities. The specific data and assumptions are set out in the annexes to each report.

One trade-off inherent in the methodology is that some types of costs, which must be taken into account when designing policy action, are left out. For example, we strip out from the calculations all country-specific and sector-specific costs and transfers such as taxes and subsidies. Moreover, program and transaction costs to implement abatement measures are excluded as these are highly dependent on how policy makers choose to implement any particular abatement opportunity, which in turn depends on macro-economic assessments, societal implications and other factors.

As a consequence, the abatement costs shown in the cost curve across a range of emissions reductions initiatives do not necessarily reflect the full costs of implementing those initiatives. Smallholder agriculture provides a good example. If we look at certain types of program and income support payments, – which is what is represented in the cost curve – stopping slash-and-burn agriculture is a relatively inexpensive abatement initiative. But from a policymaker perspective, implementing this abatement initiative could be significantly more expensive than suggested by the cost curve as the transaction costs of addressing millions of farmers across a large geographic expanse would be substantial.

It is also important to note that the cost curve is intended to inform policy recommendations, not determine or generate them. It is not intended for estimating carbon prices, nor does it make recommendations as to how each abatement measure should be implemented. With forestry measures, for example, it quantifies the cost of alternative abatement measures, but does not recommend whether or how that cost should be paid out.

The cost curve is only one input for developing a green growth strategy. In some countries, a national or sub-national cost curve has helped identify and prioritise potential abatement actions. But for green growth strategies to be effective and sustainable, policymakers need to put a number of additional ingredients in place that go well beyond cost curve analytics.

First, there must be extensive stakeholder participation to ensure that the resultant policies deliver both climate security and social justice. Second, as described above, the full range of transaction and implementation costs must be taken into account to fairly compare and evaluate different mitigation options. Third, rigorous economic analysis is required to understand the direct and indirect employment and income effects of implementing mitigation programs or promoting alternate economic livelihoods. And fourth, in most cases, new policies and institutions need to be developed.

The global response to the threat of climate change provokes intense debate. It would be surprising if the GHG abatement cost curve, which has become a widely used tool, did not attract its fair share of this debate. We welcome this, and associated feedback on the methodology, and are continuously updating the abatement cost curves so that they reflect new data coming available and remain relevant to policymakers as they align their development goals with climate security.

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