
IRON AND STEEL SECTORAL APPROACHES TO THE MITIGATION OF CLIMATE CHANGE

PERFORM, ACHIEVE AND TRADE
(PAT) IN INDIA

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Abstract

The Indian government is currently in the design phase of the "Perform, Achieve and Trade" (PAT) scheme, intended to increase the energy-efficiency of high-carbon-emitting sectors of the economy, including the iron and steel sector.

This brief explains what the PAT is, what its potential might be, how it could work and offers some preliminary conclusions about its prospects and recommendations for its ultimate design. The analysis is based on an forthcoming report by Climate Strategies; part of a series of papers that analyses the potential of sectoral approaches to assist with mitigating greenhouse gas emissions, with a particular focus on the iron and steel sector.

What is the PAT scheme?

The “Perform, Achieve and Trade” (PAT) scheme is a new policy that India plans to implement in 2011 in order to increase energy-efficiency in nine high-carbon-emitting sectors of the national economy. It uses a market-based mechanism, covering more than 700 units and facilities whose energy consumption exceeds sector-specific minima (Bhargava, 2010) and which together account for more than 50% of fossil fuels used in India, including large-scale plants and sponge iron producing units in the iron and steel industry. (Ministry of Environment and Forests, Government of India, 2010a). The PAT will not apply to secondary steel production in the small and medium-sized enterprises (SME) sector, which currently make up around 48% of the sector, but their inclusion may be considered at a future point in time.

The PAT will operate like the EU Emissions Trading Scheme (ETS), but instead of controlling absolute amounts of carbon emitted, it will focus on energy intensity – the amount of energy used to produce each unit of output. It will introduce successive, increasingly stringent caps on the energy intensity of different sectors over a number of policy phases. Companies that meet these targets will then be rewarded with Energy Savings Certificates (ESCerts), which can be traded with under-performing companies, either within a sector or within all sectors covered (this is still to be decided). In this way, the national target for energy intensity will be achieved; by relying on market drivers to incentive investments among actors that can improve performance most cost-effectively (Bureau of Energy Efficiency, Ministry of Power, Government of India, 2008; Ministry of Power, Government of India, 2007).

The PAT is also a type of “sectoral approach” – a strategy for climate change mitigation that focuses on negotiating agreements for particular sectors, on the basis that broader, less-nuanced policies might make them less competitive internationally or simply lead to the relocation (“leakage”) of emissions elsewhere. It is, however, purely a national scheme, aimed at helping India deliver its domestic commitment (announced in the run up to the Copenhagen 2009 climate summit) to reduce GHG emissions by 20-25% by 2020 against 2005 levels. It does not form part of any international plan to incentivise greenhouse gas (GHG) emissions reductions in a specific sector.

The first phase of the PAT was originally envisaged for 2009-12, but is now scheduled for April 2011–2014. The policy is being coordinated by the Bureau of Energy Efficiency (BEE) in the Central Government, as one of four parts of the “National Mission on Enhanced Energy Efficiency” (NMEEE), itself one of the eight missions for the National Action Plan for Climate Change (NAPCC). The NMEEE was approved by the Union Cabinet on 24 June 2010, with funding of INR 235.35 Crores (US\$ 50 million), the creation of two new posts of Deputy Director General in the BEE and a target of annual fuel savings of 23 million tonnes and greenhouse gas emissions of 98.55 million tonnes per year. (Bureau of Energy Efficiency, Ministry of Power, Government of India, 2010)

How big an impact might the PAT have?

Policy-makers in India predict that the PAT could accelerate improvements in energy efficiency for facilities accounting for 25% of India’s fossil fuel use, and reduce CO₂ emissions by 25 million tonnes per year by 2014-15 relative to business-as-usual (Ministry of Environment and Forests, 2010b). This is approximately 1.4% of the country’s projected total annual CO₂ emissions in 2015. (IEA, 2009) Potential savings in the 2011–2014 phase have been estimated at 9.8 million tonnes of oil equivalent (mtoe), at an anticipated total investment cost of INR 300 billion (around US\$ 6.5 billion) (Umashankar, 2010).

The iron and steel industry accounts for 28% of the total industrial greenhouse gas (GHG) emissions in India (Ministry of Environment and Forests, Government of India, 2010a). Historical trends suggest that India’s iron and steel industry, on its current trajectory, will take 30 years to achieve today’s world average standard for energy efficiency. This matches the estimates from industry experts, who have stated that the complete renewal of the sector can only happen in 30-40 years’ time (Roy, forthcoming, December 2010). Reductions in the iron and steel sector will be key to the success of the PAT.

How exactly will the PAT work?

The nine sectors to be covered by the PAT are: the thermal-power-based electricity generation industry, the fertilizer industry, the iron and steel industry, the cement industry, the pulp and paper industry, the aluminium industry, the chlor-alkali industry, the textiles industry and the rail industry.

There are two main stages involved in its organisation: target-setting and the creation of a national certificate-trading market.

- **Target-setting**

Targets for energy efficiency are to be based on "specific energy consumption" (SEC) – the amount of energy needed to execute a certain activity, often expressed as gigajoules per tonne of product. (Worrel, 1994)

Since 2006, the BEE has required industries to undertake an SEC-audit and report the results. It is currently working towards assigning each plant or production unit an individual specified target for reduction from its current SEC in the three-year period of April 2011-2014, based on a mandatory baseline survey of SECs in each sector (Bureau of Energy Efficiency, Ministry of Power, Government of India, 2008; Ministry of Power, Government of India, 2007). Potential sector-wide targets are also being discussed with industry units and associations. Current plans are that plants and production units will be categorized into 3 or 4 groups based on current SEC levels. More energy-efficient plants or production units will be given a lower reduction target (1-2%) than units with a higher SEC (where targets could be up to 5-8%). Target setting will be sectoral, either based on average performance, current improvement rates or trend in payback period values.

The challenges involved in setting and agreeing benchmarks should not be underestimated. The recent experience of the European Commission in setting benchmarks for allocation under Phase 3 of the Emission Trading Scheme (EU ETS) has shown that the process can be technically and politically challenging, and that a significant time period is required to work through the process (see resources under EC DG Clima (2010) for further details). The implementation plan announced by the BEE identifies support, including funding, for the establishment of a baseline energy audit and provisions for measurement, reporting and verification. (MRV) (Garnaik, 2010; Bureau of Energy Efficiency, Ministry of Power, Government of India, 2010).

A system for detailed third-party verification, with transparent reporting provisions, is also planned.

- **The creation of a national certificate-trading market**

At the end of the first phase of the PAT, currently planned to last from April 2011–2014, Energy Savings Certificates (ESCerts) will be given to companies who have achieved increased levels of energy efficiency beyond their BEE-negotiated target. ESCerts are to be issued by the BEE in the form of "virtual share certificates", shares that are stored on a database with no physical master copy, reducing the need for manual processing and lowering the risk of theft, forgery or damage. The repositories would be the national shares exchange markets.

Ultimately, the strength of the incentive to invest in energy efficiency will be most influenced by the price of the certificates. The BEE is currently planning to make initial ESCerts prices equivalent to the crude oil price, although their exact rationale for doing so has not been made publicly available, and nor has the mechanism to introduce such a 'price floor'. On the one hand, the idea might be to give ESCerts a minimum price in order to ensure that there is a certain financial incentive to increase energy efficiency, and to give certainty and stability to those considering investments in energy efficiency. On the other hand, it is not clear how this is intended to combine with the ESCert trading system, where prices would need to fluctuate in order to achieve the targeted energy-efficiency improvements at lowest cost. It is also understood that the decision as to whether ESCerts could be traded within a sector or between sectors is yet to be made. Wider coverage of trading would lead to the most economically-efficient solution, but the BEE might decide that they wish to guarantee reductions from individual sectors by excluding trading between sectors, at least in the initial phase of the PAT.

Frequently asked questions:

1. Why focus on energy efficiency?

The PAT introduces a cap on energy intensity rather than absolute emissions for a number of reasons. Firstly, committing to an energy-intensity target allows developing countries to focus on mitigating their GHG emissions in a way that does not constrain growth – the aim is to reduce emissions per unit of output, but output itself is free to expand. It is hard, however, to predict whether the energy-intensity cap will be able to balance out activity-led growth in GHG emissions, so absolute emissions might still increase.

Another reason to focus on energy intensity is that, unlike carbon, energy is already priced. Even without the ESCert system, it can be financially rewarding for a business to invest in efficiency because this means it saves money on its energy inputs. The extent to which energy-intensity improvements will lead to emission reductions differs depending on the industry in question, but for the iron and steel sector at least there is a high correlation between energy-intensity improvements and carbon reductions, given the importance of coke (a high-carbon form of coal) during the production of new steel.

Finally, the decision is also a political one. Policymakers in India are trying to address the problem of climate change while remaining consistent with their position in international negotiations.

2. Would the PAT really provide enough incentive to increase efficiency in the iron and steel industry?

As stated above, there are already financial benefits to increasing energy efficiency – companies save money on energy inputs. By giving energy-efficiency added value through its certificate trading scheme, the PAT has the potential to offer a “double dividend”: industrial units can benefit from energy-input cost savings that would not be cost-effective in a business-as-usual scenario as well as the revenues they receive from sale of ESCerts.

In the iron and steel industry, sector experts feel that the major barriers to efficiency increases are the age and the scale of facilities, meaning that significant levels of investment would be needed in the early retirement and replacement of some plants. The financial returns on this kind of investment will be calculated according to ESCert prices, so this is an important area of uncertainty within the policy's operation. Without a minimum price for ESCerts, investment in enhanced energy efficiency in the iron and steel sector could be a risky project – though not investing, and hence being forced to buy ESCerts, could be the greater risk. Experience from UK Climate Change Agreements (a similar scheme) indicates that, in practice, PAT is likely to induce an “awareness effect” – an enhanced management focus on energy efficiency, with risk-averse companies often inclined to invest in energy efficiency (given the financial payback over a number of years) rather than “take their chances” on having to buy ESCerts at an unknown price.

3. How does it fit into climate change negotiations?

The 2007 Bali Action Plan opened discussion on Sectoral Approaches (SAs) and Nationally Appropriate Mitigation Actions (NAMAs) as a part of a larger international framework for climate change mitigation. The aim of these proposed mechanisms was to alleviate competitiveness concerns, facilitate the diffusion of best-available technology and enhance developing country participation.

Since the PAT scheme could lead to measurable and verifiable additional reductions in GHG emissions in Indian sectors beyond BAU, including the iron and steel, and generate ESCerts, the ESCert market and CDM market could theoretically be integrated by allowing for the bundling of related projects. The PAT could become a NAMA (Nationally Appropriate Mitigation Action) which creates the possibility for international finance.

However, this policy pathway is not envisaged explicitly in the current design of the PAT scheme. Rather

than act as complementary policies, it is also possible that the ESCert market could face competition from the CDM market. Investors might choose between PAT projects and general CDM projects depending on price uncertainty and differentials.

Even if the PAT does not generate international credits, it could be used by India as proof of its commitment and progress towards mitigating climate change, demonstrating that India is undertaking NAMAs as part of its commitment under the Copenhagen Accord. It may also allow, at least partially, for India to avoid border taxes or other instruments that certain countries may implement if they feel that their domestic climate actions represent an unfair burden on their producers relative to international competitors. Finally, the PAT is potentially a good opportunity to test the pros and cons of a national as opposed to a global scheme for mitigating climate change in a developing country.

Looking forward: prospects for the PAT and recommendations

Although the final details of the PAT are still being designed, the scheme seems to have the potential to reduce the carbon footprint of India's iron and steel sector. Climate Strategies is currently conducting an analysis of the policy, as part of a larger project looking at the potential for sectoral approaches to help mitigate GHG emissions from the iron and steel industry, due to be published in December 2010.

Preliminary findings from the study suggest that the following conclusions and recommendations can be made:

- Given its wide coverage, it might be too ambitious to implement the PAT by April 2011, particularly across all sectors. Experience from other schemes across the world shows that design details are critical to get the incentives right for potential investors. Developing and designing these details presents technical and political challenges, which may take a significant period to work through. There are dangers in implementing a scheme before all the details have been fully specified: investors are always disincentivised by uncertainty. Quick implementation with too high focus on company or unit-of-operation energy-intensity targets in the first phase might result in under-compliance, leading investment funds to flow out of the industry and missing opportunities to deliver energy-efficiency benefits.
- A solution to this might be to begin the program by focusing on one sector alone. A natural choice would be the iron and steel sector, due to there being less diversity in energy-efficiency across companies and the sector having a good record in responding to previous energy-efficiency measures. With considerable effort, it could be made ready for 2012 implementation.
- The most important step in readying the sector for the PAT would be target-setting. This can be approached in two stages: using historical information, the BEE can specify the minimum rate at which energy-intensity should decline. Then, it can ask companies to conduct bottom-up analyses to determine realistic targets for "enhanced performance" within a time frame of their choice. Analysis based on energy-efficiency trends and technological advancement in the Indian iron and steel industry shows if the PAT could deliver an average 3% decrease in energy intensity per unit of output as a sector average, year-on-year, the industry could reach the world's average energy efficiency by 2020.
- It is important to scale up awareness of the PAT among industry experts, CDM experts, technical and commercial managers, industry consultants and associations within affected sector. A survey conducted in the course of the Climate Strategies study has revealed that enthusiasm for the policy in industry circles is currently low, with some experts predicting that it will become a command and control instrument.
- To some extent, the BEE can try to push improvements by establishing technological standards for new plants and machinery in collaboration with the World Steel Association (WSA).
- Specifying equipment standards could allow the PAT to be extended to SMEs. This could avoid some leakage that may emerge in the short run from secondary steel production in the SME sector, currently representing almost 48% of the sector in India and growing quickly.
- The PAT might benefit from the introduction of a minimum price for ESCerts. A potential mechanism for

this could be the auctioning of ESCerts at various intervals by the Government of India who would administer and operate the PAT. Trading details, notably this potential 'price floor' and whether sectors can trade with each other would need further consideration based on the analysis of industry realities and options. Transparent information on the progress of companies towards their PAT targets and on the market for ESCerts itself would encourage participation in trading and lower compliance costs. However, companies would be likely to resist such transparency where they felt it encroached on commercial confidentiality or where they felt it would act against their interests.

If ESCerts could be labelled with carbon-reduction-equivalence, this would make them comparable and competitive with similar products in the market, such as certified emissions reductions (CERs).

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