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Key messages

- India's Perform, Achieve and Trade (PAT) scheme provides a model for other developing countries to consider as they seek ways to increase development and economic gains with climate co-benefits.
- The PAT scheme targets energy consumption reductions of 6.6 million tonnes of oil equivalent in 478 covered facilities.
- Given the wide range of efficiencies in each sector, the PAT scheme sets plant-specific targets instead of a sectoral target, with the average reduction target being 4.8%.
- During programme design, transparency, engaging industry and demonstrating flexibility are key factors to ensure success and secure industry buy-in. Implementing a scheme of this scale requires adequate human, institutional and financial resources. A strong monitoring, reporting and verification system can build confidence in the initiative and facilitate linkages with international carbon markets and financing.

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Creating market support for energy efficiency: India's Perform, Achieve and Trade scheme

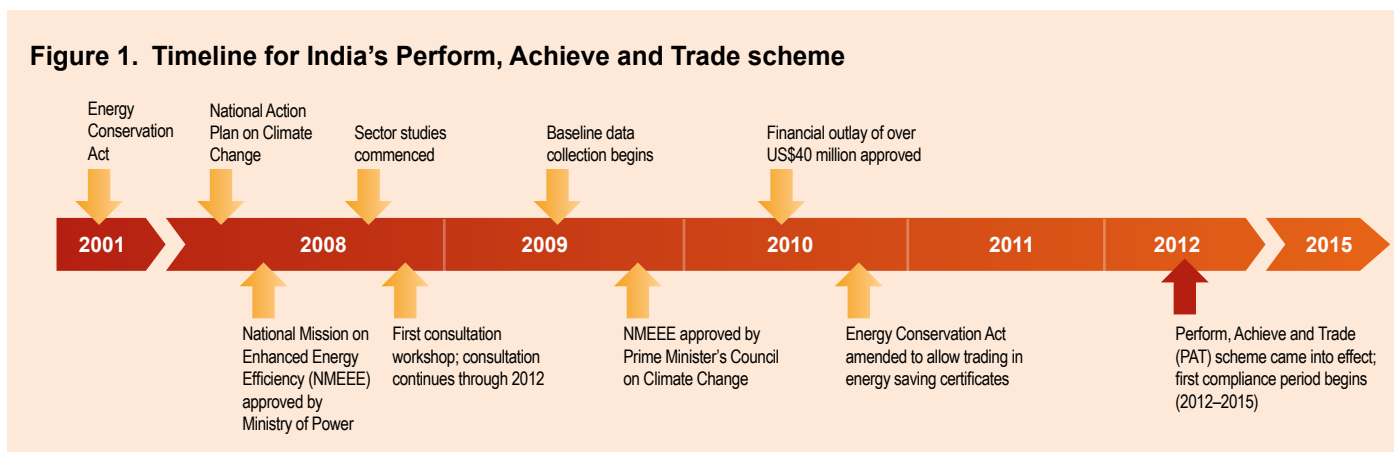
India, recognising the challenge of pursuing rapid economic growth in a sustainable manner, has developed an energy efficiency scheme to govern large energy consumers. Energy efficiency measures can support India's development priorities while yielding climate co-benefits. There is significant potential to improve efficiency in energy-intensive industries and the electricity sector, which together were responsible for about 60% of India's greenhouse gas emissions in 2007.¹ The Perform, Achieve and Trade (PAT) scheme aims to tap into this potential. Energy efficiency measures under PAT will help reduce emissions by 26 million tonnes of carbon dioxide equivalent (CO_{2e}) by 2015,² thus contributing to the national target of 20–25% reduction in carbon intensity from 2005 levels by 2020. This brief provides an overview of the scheme, examines key issues related to its design and implementation, and concludes with some early lessons for countries considering similar initiatives.

Through the PAT scheme, India has become the first developing country to adopt an energy efficiency trading scheme that uses market-based mechanisms. PAT is the flagship programme under the National Mission on Enhanced Energy Efficiency, one of eight missions under the National Action Plan on Climate Change, 2008. It was conceived in 2008 to promote India's development objectives – to strengthen energy security, reduce energy deficit and enhance the global competitiveness of Indian industries – while yielding climate change mitigation co-benefits. The programme aims to scale up energy efficiency in targeted industries in a cost-effective manner

through various incentives and penalties, while allowing for increased production and energy consumption to meet the needs of a growing economy. It is expected to save 6.6 million tonnes of oil equivalent (toe) over its first cycle (2012–2015).³

The PAT scheme originated in the 2001 Energy Conservation Act, which empowers the Indian Government to identify energy-intensive industries as Designated Consumers (DCs) and set mandatory energy conservation standards for them (Figure 1). Under the Act, the Ministry of Power's Bureau of Energy Efficiency (BEE) identified DCs from 15 sectors, including

Figure 1. Timeline for India's Perform, Achieve and Trade scheme



the 8 sectors targeted in the PAT scheme: aluminium, chlor-alkali, textile, pulp and paper, iron and steel, fertiliser, cement and thermal power plants. The scheme covers 478 facilities.

Each facility under the PAT scheme has been assigned a specific energy consumption (SEC) reduction target compared to its baseline SEC, to be achieved by March 2015.^{4,5} SEC is energy consumed per unit of production, expressed in toe per tonne of product. The baseline SEC is the average for the period April 2007 – March 2010 (Box 1). DCs receive tradable, certified energy savings credits if they achieve efficiency gains beyond their target. If they fall short of the target, they can buy energy savings credits to make up the difference. Energy savings credits will be issued to eligible facilities annually after the first year of the compliance period (2012). BEE has not set a minimum price for trading of energy savings credits; the market will determine the price.

The average SEC reduction target under the PAT scheme is 4.8%.⁶ Achieving this target is expected to cost the industry over US\$5.4 billion (INR 300 billion)⁷ Given its scale and its implications for industry, PAT needed a lengthy design and preparation phase. Stakeholder participation, data collection, and building leadership and institutional capacity were critical elements of this phase.

Stakeholder participation

Transparency, flexibility and industry engagement in programme design help ensure effective industrial energy efficiency policy with adequate buy-in from the covered facilities. PAT's design phase involved extensive consultations with the DCs through workshops and sector- and plant-level meetings. These consultations aimed to increase awareness and improve industry's preparedness, alleviate concerns about the scheme's

objectives and elements, convey its value to sceptical industries, and seek design-related inputs. Consultations ensured the design phase was transparent and allowed industry to engage in the process. Industry associations, such as the Confederation of Indian Industry and the Federation of Indian Chamber of Commerce and Industry, also convened stakeholder consultations for their members. The two-year consultation phase featured approximately 100 workshops and meetings that brought together DCs, state government officials, and energy auditors and managers.⁸

These consultations helped the PAT scheme to evolve significantly. For instance, the scheme's consultation document discusses the difficulty of adopting a single sectoral target, given the wide range of SEC within each sector due to factors such as plant age, quality of raw materials and variation between processes.⁹ The consultation document recommends plant-specific targets, which were eventually adopted under the scheme. The stakeholder consultation process provides an example of how to engage industry early in the scheme design in order to secure buy-in.

Despite the stakeholder consultation process, some DCs still lack knowledge about the scheme and are not fully engaged. While DCs in some sectors (e.g. cement) show a high level of awareness and confidence, others (e.g. fertilisers and

Box 1. Highlights of the Perform, Achieve and Trade scheme

- Four years spent in design, data collection and analysis, and stakeholder consultations; implementation began 30 March 2012
- First cycle: 478 plants in eight sectors, accounting for roughly 60% of India's total primary energy consumption
- First compliance period: 2012–2015
- Sets plant-specific targets instead of a sectoral target
- Average target: 4.8% reduction in specific energy consumption
- Estimated savings: 6.6 million toe in the first cycle

Sources: Diddi, 2011; Garg, 2012; MoP, 2012.

textiles) lack understanding and capacity to implement the scheme (Table 1).¹⁰ “The industry needs more information on the mechanisms and systems under the PAT scheme and how to achieve their targets. This requires greater awareness at the operational level,” noted M.A. Patil, Federation of Indian Chambers of Commerce and Industry.¹¹ In addition, the consultation process saw fairly limited civil society and local state government involvement, with PAT being a largely federal government scheme. These issues underline the importance of continued stakeholder engagement.

Laying the foundation for baseline and target setting

Experience from the European Union Emissions Trading Scheme has shown that credible plant-level data are needed to establish accurate baselines and set realistic targets.¹² India’s Energy Conservation Act mandates DCs to report their annual energy consumption and regularly undertake energy audits.¹³ However, before the PAT scheme, there had been no significant effort to implement these requirements. During PAT’s design phase, BEE, together with State Designated Agencies (which are state-level agencies that support BEE) and energy-auditing agencies, collected plant-specific data and audited plant production

and energy consumption data from 2005 to 2010. Auditing firms were identified through a bidding process and trained to collect the data in a specified format, ensuring consistency and standardisation. Facilities provided data on fuels used, production quantity, recovered energy, purchased electricity and other indicators, which helped verify whether a plant’s energy consumption was above the sector-specific threshold that would identify it as a DC. Subsequently, baseline energy audits were undertaken in 2011 for each DC. Plant-specific data on historical energy consumption and savings potential were used to establish baselines and targets.¹⁴

The PAT scheme has created an institutional structure to enable online data submission, annual audits and verification by designated auditors.¹⁵ Facilities with limited energy efficiency knowledge may need support to collect annual data. Ongoing monitoring, reporting and verification will be crucial to maintain the scheme’s credibility and integrity.

Institutional leadership and existing capacity

A national scheme involving consultations, data collection, and monitoring and verification across nearly 500 plants requires considerable human and

institutional capacity. It needs agencies with clear mandates, personnel with auditing and energy management skills, energy efficiency policies, organisations adept in energy management strategies and energy efficiency financing, and effective coordination across a range of stakeholders. The design and implementation of the PAT scheme benefitted from existing institutional capacity and a pool of skilled professionals – although it placed a huge demand on these resources.

There has been a growing familiarity with energy audits within India since the 1980s, with the establishment of the Energy Management Centre in 1989 and with organisations like the National Productivity Council leading energy audits. Some states like West Bengal and Kerala have required energy audits since the 1990s. In 2001, the Energy Conservation Act established BEE and state-level agencies, creating an institutional framework to implement energy efficiency policies.¹⁶ BEE certifies energy auditors, accredits auditing firms, and conducts training and certification exams for energy managers and auditors to develop a pool of energy efficiency professionals in the country. In 2010, India had over 7,700 certified energy managers – almost 70% of whom were certified auditors.¹⁷

An institutional framework consisting of State Designated Agencies, designated energy auditors, trading exchanges and financing facilities has been established to implement the scheme.¹⁸ BEE is leading the process with in-house and external technical experts and auditing agencies. State-level capacity, however, needs further strengthening to effectively delegate regulatory, facilitative and enforcement functions related to identifying DCs, collecting baseline data, conducting monitoring and verification, and assessing compliance and levying penalties.^{19,20} Also, new capacity is needed to support trading in energy efficiency credits.

Table 1. Sector-wise awareness levels regarding the Perform, Achieve and Trade scheme

Sectors	Level of awareness
Aluminium	Limited awareness and understanding
Cement	Awareness at top management and energy managers level
Chlor alkali	High level of awareness, in part due to active engagement by the sector association
Fertilisers	Low awareness in general, but improving through engagement with the sector association
Iron and steel	Adequate awareness
Pulp and paper	Limited to a small group
Textiles	Very low levels of awareness
Thermal power plants	Adequate awareness in centrally and privately owned power plants, but limited awareness in state-owned power plants

Source: Confederation of Indian Industry (CII), 2011.

Lessons and implications

The design and planning phase of the PAT scheme offers useful lessons:

- **Seek early buy-in from industry and other key stakeholders to ease compliance.** Stakeholder engagement is often neglected in a mandatory policy; however, it can increase compliance rates by raising awareness and improving preparedness, demonstrating flexibility in policy design, securing participant engagement and buy-in early on, and identifying innovative solutions to address country- and industry-specific realities. Sustained stakeholder engagement over the course of implementation can further increase the likelihood of success.
- **Obtain accurate data to define coverage, establish baselines, set goals and monitor performance.** Comprehensive, verifiable data are essential to design a mechanism that enjoys credibility both domestically and internationally. Sector associations and state-level agencies can assist in developing expertise and establishing systems to facilitate data collection, auditing and verification. Data collection is often resource-intensive but, depending on the nature of the policy, international support may be available. A strong monitoring, reporting and verification system built upon accurate data can help create linkages with international carbon markets, translate policies into Nationally Appropriate Mitigation Actions and attract finance from climate funds.
- **Invest in strengthening institutional and human capacity.** Technical and institutional capacity is a prerequisite for developing an energy efficiency trading scheme. As India's example shows, existing capacity – a result of efforts over the last 25 years – provided a pool of experts to tap during planning and implementation. Often such capacity can be used to realise multiple initiatives, thus sharing the cost burden across a suite of policies. Capacity-building efforts promoting self-reliance in the long run are also relatively easier to fund using international support.

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