

Pakistan Energy Efficiency Targets

Policy Interventions & IMF RSF Commitments

Industrial Energy Efficiency and Decarbonization (EE&D)

Why is industrial energy efficiency relevant for Pakistan?

- *“Improving the energy efficiency of industrial production can reduce energy expenditure, increase industrial competitiveness while providing wider economic and environmental benefits.”*

What are the most immediate Opportunities for Industrial EE&D?

- *Industrial EE&D can be achieved through multiple pathways.*
- *Replacing ubiquitous industrial technologies such as motor-driven systems, boilers, and cooling systems, with readily available, cost-competitive efficient alternatives could achieve rapid, near-term gains in energy efficiency.*

What are the main barriers to improving industrial energy efficiency in Pakistan?

- Investments in many readily available, efficient technologies with relatively short payback periods are hindered by information, policy and financial barriers.

BOX 1: Near-term crosscutting EE&D measures for industries in Pakistan

Motor replacement

Motors are used in industrial applications to drive equipment such as compressors, fans, pumps, conveyors, and other manufacturing machinery. For an electric motor with a typical lifespan of 15 years, the motor's operational cost (energy and maintenance) comprises over 85 percent of the overall life-cycle cost of the machine. Reducing the amount of energy required to run motor-driven systems can therefore provide relatively rapid and substantial efficiency gains to the industrial sector while reducing production costs. In Pakistan, there are an

estimated 14 million electric motors installed in the industrial, commercial, and domestic sectors, that consume almost half of the overall electricity supply. ***The potential energy savings are around 3.3 terawatt hours (TWh), and potential emissions reduction is roughly 2.3 million tons of CO₂ for replacing 300,000 motors. The payback period of efficient motors varies between 1.4 years for 5.5 kilowatt (kW) motors and 1.6 years for 110 kW motors. (see annex 3, figure 3A.1)***

Example of Barriers, Recommendations and International Examples

Lack of regulatory policies	<ul style="list-style-type: none">• Gradual enforcement of Minimum Energy Performance Standards (MEPS) especially for boilers and motors, using government procurement as a starter to prime the market.• Mandatory energy audits and specific energy consumption targets for bulk energy consumers and other utility customers with high consumption levels.	Many countries have introduced MEPS for motors, for example. The USA was the first, setting a MEPS level equivalent to IE2 in 1997, and raising this to IE3 in 2007. China set its first electric motor MEPS at the equivalent of IE1 in 2002; and now sets it at IE2. Viet Nam also introduced MEPS at IE1 in 2015, with a commitment to move to IE2 when market conditions allowed. ^{viii}
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Source: [Energy Efficiency – Knowledge Notes \(World Bank, 2025\)](#)

Vietnam's MEPS Framework and Electric Motor Example

Mandatory MEPS and National Energy Efficiency Goals

POLICY INSTRUMENT	YEAR	KEY PROVISIONS
Decision 51/2011/QĐ-TTg	2011	Introduced mandatory labeling and MEPS roadmap
Decision 04/2017/QĐ-TTg	2017	Expanded MEPS coverage; banned low-efficiency products
Decision 14/2023/QĐ-TTg	2023	Updated product list; added new categories like induction hobs and desktop computers

Electric Motors Under MEPS: Compliance and Impact

ASPECT	DETAILS
Regulation Start	Mandatory since 2013
Testing Requirement	MoIT-designated labs under TCVN standards
Label Types	Comparative (1–5 stars) and Endorsement (Energy Star)
Impact	Eliminates inefficient motors; promotes high-efficiency designs

Assessment of the enabling environment for energy efficiency interventions

Component	Achievements	Gaps
Governance framework and mechanisms	Energy efficiency national framework law, regulations, policies and strategic action plan. Federal and provincial energy efficiency implementation agencies.	Institutional capacity, arrangements for technical analysis, data collection and management and coordination. Resource availability.
Testing capacity for standards and labels	Test procedures and at least one testing facility for each of the five appliances	Limited access to testing facilities. No independent certification bodies.
Design and implementation of labels	Labels for space-cooling fans, LEDs, electric motor and air conditioners.	Label development coupled with standards in regulations, no systematic testing of label design efficacy, no centralized system for information sharing among surveillance and monitoring authorities
Standard setting	MEPS for five appliances including fans, LED lights, ACs, induction motors and refrigerators.	Limited technical capacity. No systematic analysis of market impact. Limited complementary programs to support standards.
Compliance framework	Defined monitoring, verification and enforcement mechanisms	Weak compliance implementation capacity. Low enforcement; inflexible mechanism for waivers; and limited public access to surveillance results.
Impact evaluation	None	No predefined ex-ante or ex-post evaluation mechanisms or capacity.
Complementary policies and programs	Complementary policies including bulk procurement, fiscal and financial incentives etc. defined in action plans. Limited bulk procurement and replacement programs and a green reward for fan manufacturers.	No financial or fiscal incentives offered to manufacturers or consumers, no broad-based support to manufacturers or other complementary policies.
Communication strategy	Defined in national policies and action plans. Limited interventions to publicize labels and benefits of energy efficiency.	Limited national or regional program for awareness raising among stakeholders.

IMF US\$ 1.4 billion Resilience Sustainability Facility (RSF)-Pakistan

The Resilience and Sustainability Facility (RSF) will support Pakistan's efforts in building economic resilience to climate vulnerabilities and natural disasters, with access of around \$1.4 billion.

- (i) Prioritizes resilience to natural disasters and strengthen public investment processes at all levels of government;
- (ii) Makes the use of scarce water resources more efficient, including through better pricing;
- (iii) Strengthens coordination of natural disaster response and financing between federal and provincial governments;
- (iv) Improves the information architecture, and disclosure of climate-related risks by banks and corporates; and
- (v) Supports Pakistan's efforts to meet its mitigation commitments and reduce related macro-critical risks.

Pakistan govt Reform Measure requests under RSF (13 separate initiatives)

RM's 1, 2 & 3

Strengthening public investment and budget planning process at all levels of government to assess and prioritise projects that build resilience to natural resources

RM's 4 & 5

Efficient water use and improved pricing

RM's 6

Strengthening federal-provincial coordination of natural disaster risk financing

RM's 7 & 8

Banks & corporates improve climate risk disclosure to enable climate finance

RM's 9, 10, 11

Decarbonisation by shifting from imported fuels/petroleum

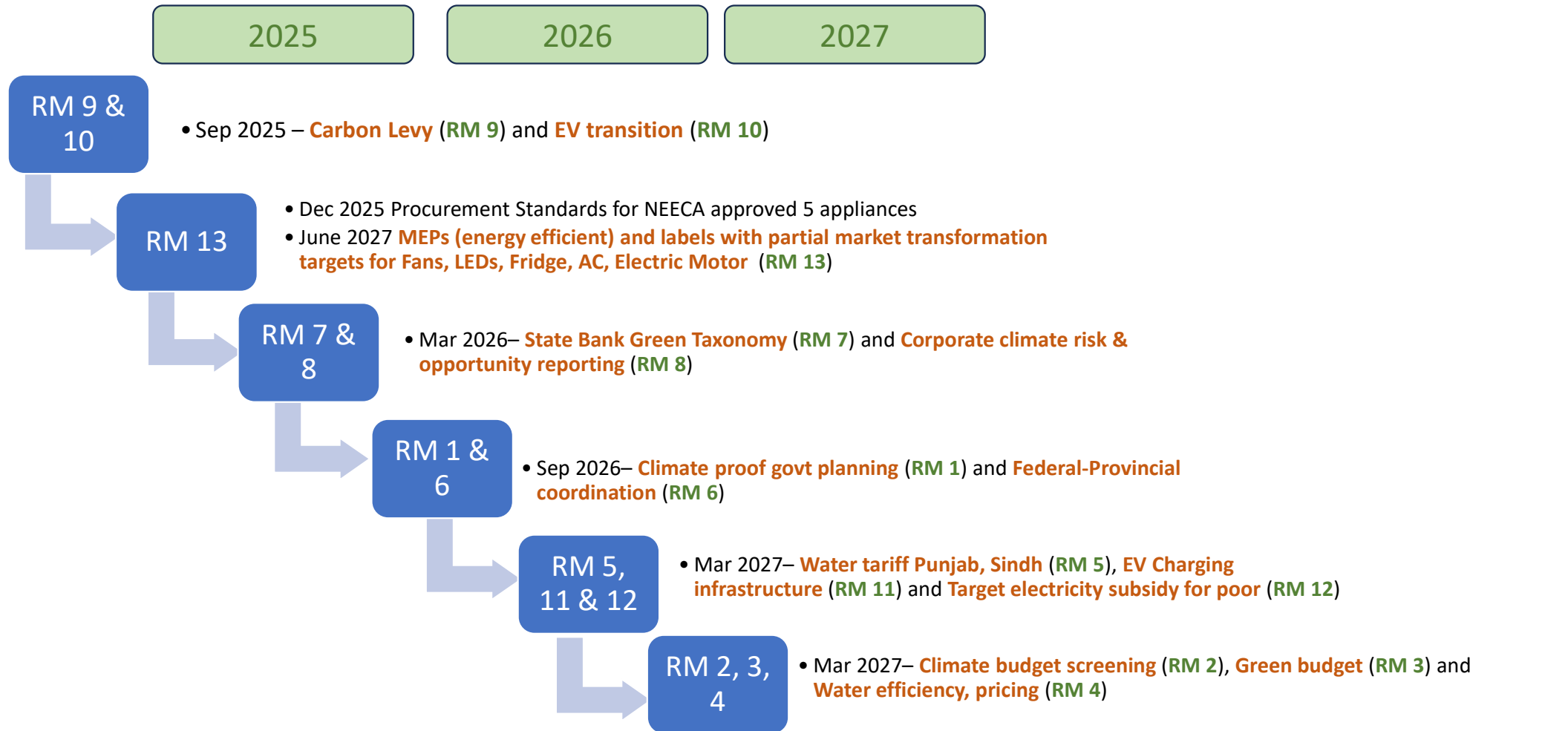
RM's 12, 13

Support to meet Pakistan's mitigation commitments (NDC 2021)

MEFP 40

40. **Efforts to boost energy efficiency will help us to meet our national mitigation commitments.** We will improve energy efficiency in Pakistan by implementing recently-adopted regulations on minimum energy performance standards (MEPS) for consumer appliances by achieving MEPS compliance for all new fans (40 percent), LEDs (30 percent), refrigerators (35 percent), air conditioners (30 percent), and motors (25 percent) by end-June 2027; and via Public Procurement Regulatory Agency adoption of new regulations, by end-December 2025, mandating that procurement of the same five appliances, at the federal and provincial levels, are MEPS-compliant (**RM13, end-June 2027**). To support tracking and implementation of this objective, the National Energy Efficiency and Conservation Authority will provide tracking data on progress toward consumer appliance adoption on a quarterly basis, beginning in December 2025.

Reform Measures - Implementation timeline



RM 13 – MEPs for 5 priority appliances:

Fans, LEDs, ACs, Fridge & Motors

Eg. Space cooling fans consume 46.5 terawatt-hrs annually

(this translates to about **28 million ton CO₂e** per year, with an assumed grid factor of 0.6 kg CO₂e/KWh)

RM-13 (MEFP 40) Targets

- **Dec 2025** all public procurement according to MEPs for these 5 priority appliances
- **Jan 2026** NEECA begins quarterly tracking data of MEPs compliant appliance sales
- **Jun 2027** MEPs compliant **market share** of new appliance sales targets at least:
 - Fans (electric) – **40%**
 - LEDs (lights) – **30%**
 - Refrigerators – **35%**
 - Air Conditioners – **30%**
 - Electric Motors – **25%**



Opportunities for Implementation Agencies

Compliment with Existing Drives such as Standards and Labels and SAVE UP

- Standards and Labels Program by NEECA
- Adding SAVE – UP to the MRS list and its link to reporting by Pak. Public Procurement Authority.

Role of NEECA / Enforcement arms in Provinces

- Compliance activities
- Market Surveillance
- An opportunity to build a short program in coordination with NEECA/provincial agencies with CLASP's support

Thank You

Annex 3: Existing cross-cutting EE&D options

Figure 3A.1: Pakistan – Estimated Technical and Economic Conservation Potential of Industrial Motor Retrofits (2023)

Motor size (kW)	Cost per IE3 Motor (USD)	No. of motors considered	Capital cost required (m USD)	Energy savings (GWh/yr.)	Cost savings (m USD/yr.)	Emission savings (m y-CO ₂ /yr.)
5.5	750	120,000	90	490	65	0.3
11	1,280	90,000	115	532	71	0.4
30	2,950	60,000	177	838	112	0.6
110	10,000	30,000	300	1,456	194	1.0
Total		300,000	682	3,316	442	2.3



Energy saving:

Maximum energy saving potential of 3.3 TWh for 300,000 electric motors



Emission reduction:

Maximum emission reduction potential of 2.3 million tonnes of CO_{2-eq} for 300,000 electric motors.

Greater savings potential through even more efficient motors (IE4/IE5) but at higher cost.

If the current baseline of motors is assumed at IE0 (substandard) and they operate for 5,000 hours per year, then the payback period varies between 1.4 years for 5.5 kW motor and 1.6 years for 110 kW motor. The payback period will increase to 4.9 years for 5.5 kW motor and 9 years for 110 kW motor if the current efficiency baseline is assumed at IE1 and the motors operate for 4,000 hours annually.