ICRA

INDIAN TRACTOR INDUSTRY

Transitioning to revised emission norms likely to see a rejig in HP-wise mix

DECEMBER 2022

Highlights

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Transition to revised emission norms would lead to ~10-15% increase in cost of tractors in the >50 HP category; the OEMs expected to gradually pass on the hike to farmers.

Revised norms likely to lead to a shift in HP-wise mix going forward, with the >50 HP segment (~8% of sales in FY2022) expected to contract.

The revised emission standards for >50 HP tractors (Bharat Stage TREM IV) are slated to become applicable for tractors from January 2023, even as a big proportion of the overall industry (<50 HP, constituting ~92% of sales in FY2022) would continue to be governed by the Bharat Stage TREM IIIA norms.

India has till now lagged developed markets in emission norm evolution for tractors. The revised emission norms for the >50 HP segment were initially slated to be implemented from October 2020; the transition was, however, deferred multiple times, with the Government taking cognisance of industry representations amid the disruption brought about by the pandemic.

India remains a medium-to-high HP tractor market, with ~80% of the sales coming from the 30-50 HP categories. The revised emission norms applicable from January 2023 would apply only to >50 HP tractors, impacting ~7-8% of the overall industry volumes.

The technological know-how to meet the revised norms has been readily available with the OEMs as the export models are already meeting the evolved emission norms. The pass-through of hike to customers is, however, expected to be only gradual for the price sensitive farming community.

The OEMs are in the process of realigning their product portfolio, with tractors offering higher torque at lower HP being added to the portfolio; the same would lead to a shift in HP-wise mix with the 41-50 HP segment gaining at the expense of the >50 HP segment.

Indian tractor industry: Emission norm timeline

Exhibit: Timeline for implementation of Emission norms for tractors in India

Emission Norm	No. of years since previous emission norm implementation
Bharat Trem I, October, 1999	
Bharat Trem II, Jun 2003	+4 Years
Bharat Trem III, Oct 2005	+2 Years
Bharat Trem IIIA, April 2010 & 2011	+5 Years
Bharat Trem IV, January 2023	+12 Years
Bharat Trem V, April 2024	+1 Years

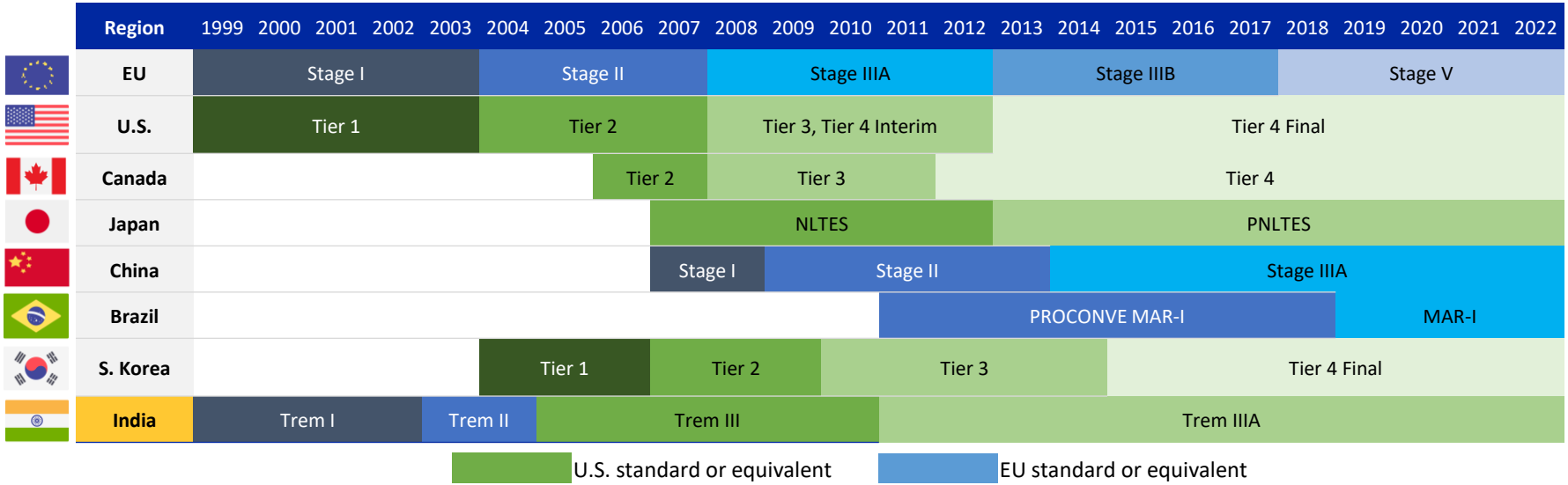
1999 → 2003 → 2005 → 2011 → 2022 → 2024

Applicable for tractors with engines bigger than 50 HP

Source: ICRA Research

India has lagged other major markets in emission norm evolution

Exhibit: Emission norm timeline across markets



Emission regulations in the US and the EU have been largely harmonised and progressed through a series of stringent tiers or stages. Most countries have already transitioned to emission standards followed by either the US or the EU. The emission norms in the world's two largest markets – India & China – have, however, lagged behind the developed countries, with standards equivalent to US Tier 3 and Euro Stage IIIA, respectively.

Source: ICRA Research

Emission norms for >50 HP category applicable from January 2023

Exhibit: Emission norm specifications from Trem I to Trem V

Stage	Month of Implementation	Engine Power (kW)	Emission (g/kWh)				
			CO	HC	HC+NoX	NOX	PM
I	October 1999	All	14.0	3.5	-	18.0	-
II	June 2003	All	9.0	-	15.0	-	1.0
IIIA	April 2010	0<P<37	5.5	-	7.5-8.5	-	0.6-0.8
	April 2011	37<P<560	3.5-5.0	-	4.0-4.7	-	0.2-0.4
IV	January 2023 (Current timeline)	37<P<560	3.5-5	0.19	-	0.4	0.025
V	April 2024	0<P<37	5.0		4.7(HC+Nox)		0.015
		37<P<560	3.5-5.0	0.2	4.7-0.4	3.5-0.4	0.045-0.015

At present, TREM III A emission norms are applicable for tractors across HP categories in India and were implemented in April 2010/2011. Post multiple deferrals (shifting implementation date from initial envisaged timeline of October 2020), emission norms are set to get stringent for >50 HP tractors from January 2023, even as a big proportion of the overall industry (<50 HP) will continue to be governed by TREM IIIA norms.

Source: The Gazette of India; ICRA Research

Significant technological changes mandated by revised emission norms

Exhibit: Key technological changes required for graduation to TREM IV norms

Material changes under TREM IV

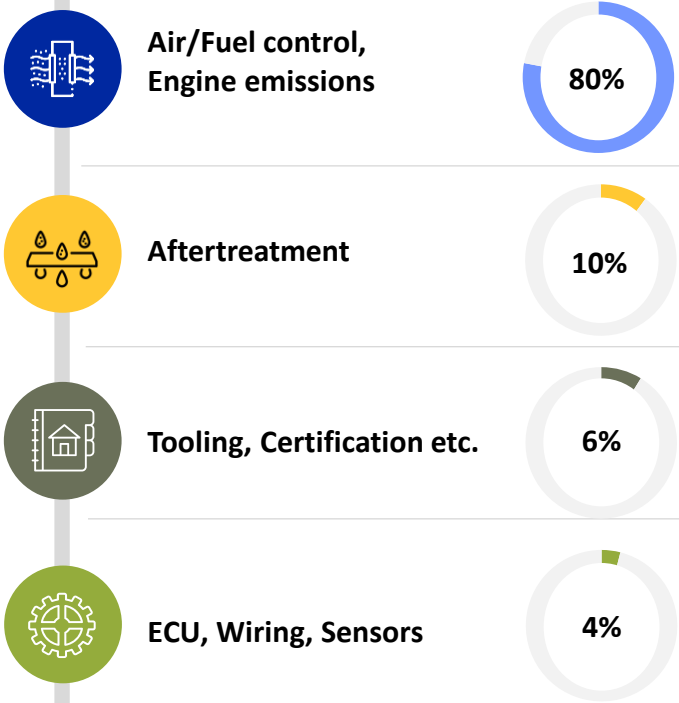
Engines

- Fuel injection systems
- Air handling technology
- Exhaust gas recirculation systems

After-treatment systems

- Diesel oxidization catalysts
- Selective catalyst reduction systems
- Diesel particulate filters

Indicative incremental cost break up



Source: ICRA Research

Transition will aid a material reduction in pollutant levels

Exhibit: Technology pathway for emission norm implementation - Tractor

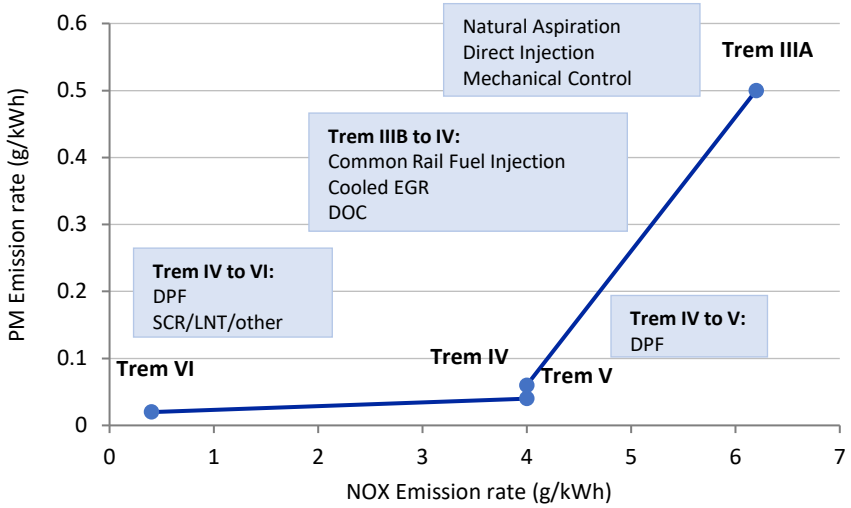
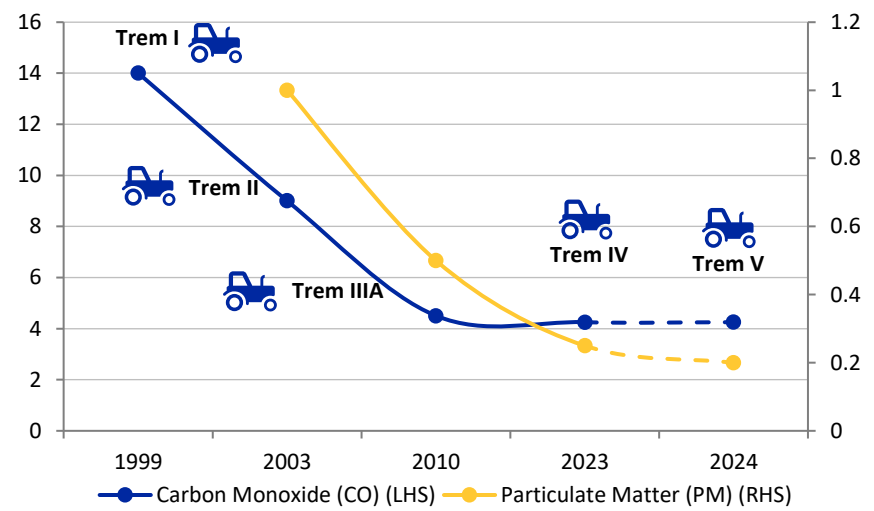


Exhibit: CO & PM emission limit trend



While significant progress has been made for the regulation of on-road vehicles, especially with the expected implementation of BS-VI norms (from April 2020), the emission control regulations for non-road vehicles have been less stringent. The revised emission norms would result in a material reduction in the emission rates of particulate matter in particular, resulting in significant reduction in pollution.

Source: ICRA Research

Material price hike on account of transition; likely to lead to rejig in HP-wise mix

Exhibit: Survey results on price hike on account of revision in emission norms

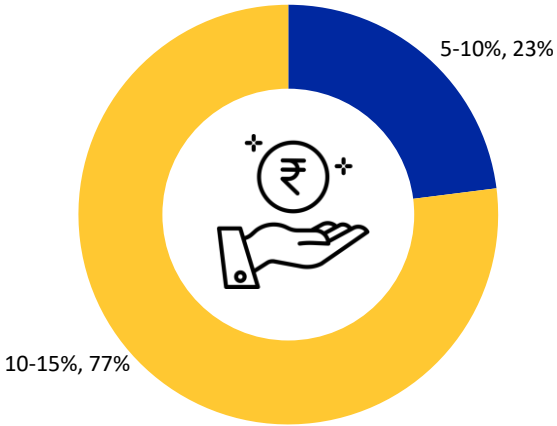
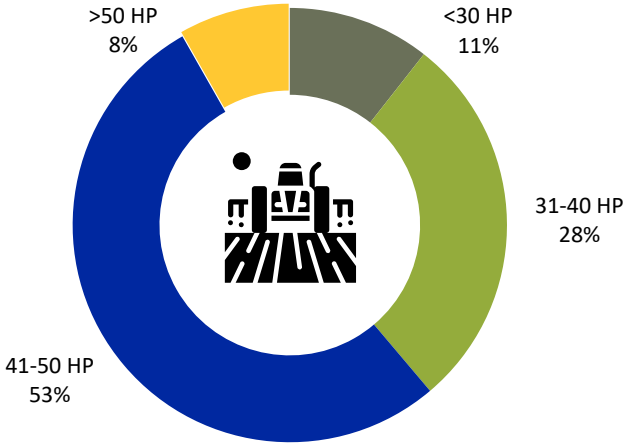


Exhibit: Trend in domestic HP wise sales mix in FY2022



Estimated price hike in 50 HP tractors
~Rs. 1.0-1.3 Lakh

ICRA estimates that the cost increase on account of revised emission norms will be in the range of 10-15%, which the OEMs will gradually pass on to the customers. The OEMs are also in the process of realigning their product portfolio, with tractors offering higher torque at lower HP being added to the portfolio; the same will lead to a decline in share of >50 HP segment going forward.

Source: ICRA Research; Total of 22 dealers across regions participated in the survey conducted in December 2022

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Thank You!