

# High Productivity Vehicles in China and India

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# The role of China and India CO2 Emission

Transport Emission China vs India

Country	Total CO <sub>2</sub> Emissions from Transport
<b>China</b>	~917 million tons
<b>India</b>	~305 million tons

Transport / Logistics Costs as % of GDP

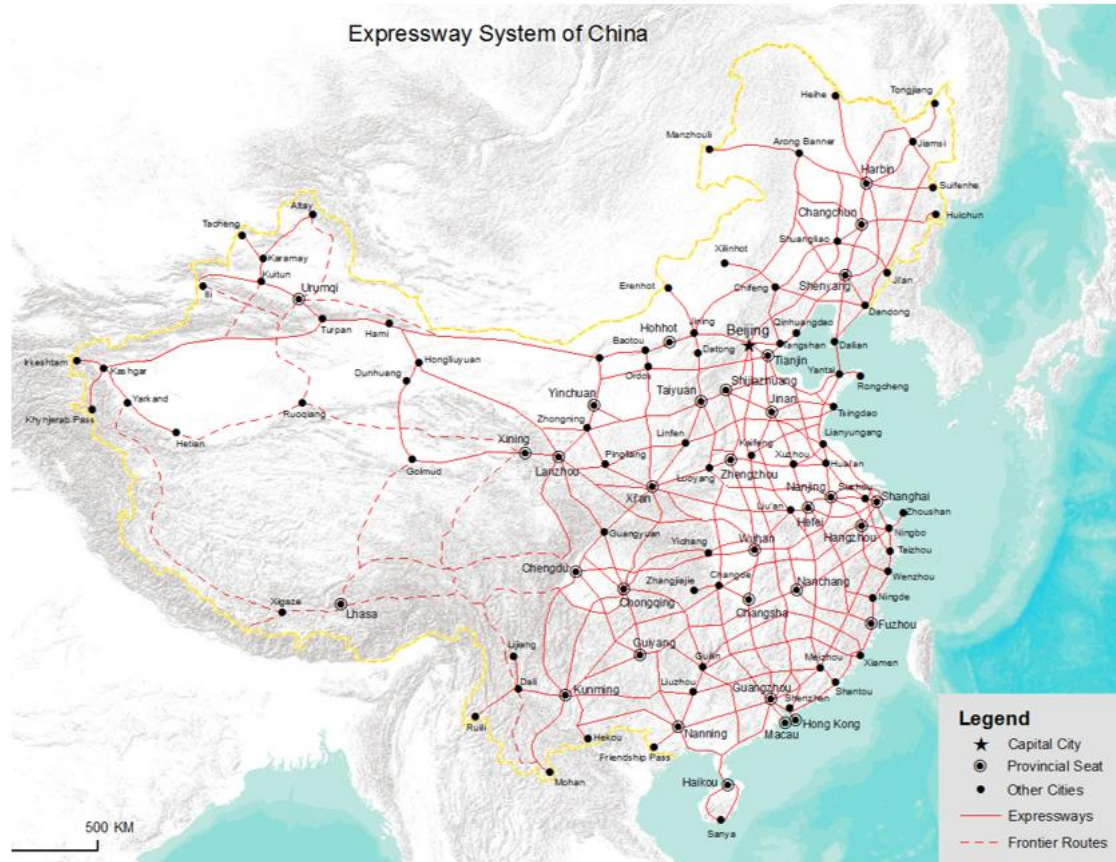
<b>China</b>	13.9 % (2025)
<b>India</b>	16.0% (2025)

Efficiency = High-Capacity Transport



# Highway Network of India and China

## - Two maps two path



# Masses and Dimensions

**China**

**Core Standard: GB1589-2016 (current) → GB1589-2026 (draft stage).**

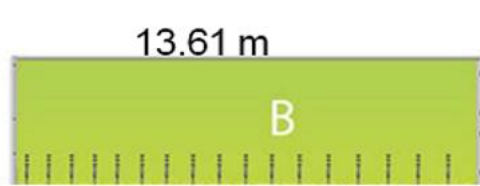
**India**

**Core Standard: CMVR (Central Motor Vehicle Rules)**



# EMS system

## Standard Goods loading platform



## Standard Vehicles



← max. 12 metres →

## Standard Trailer



# EMS system



Full Trailer



Central Axle Trailer



Semi-trailer



Link



Dolly



Tractor



Rigid

## Standard vehicle combinations (EU)

16.5m/18.75m 40/44ton



## Vehicle combinations (Sweden, Finland, Netherlands, Denmark, Norway, BE, ES, P, DE 44)

25.25m 60/64/76ton



## Vehicle combinations

>25.25m



# India Road Train Pilot



## Interaction with Regulations

- **Standards-First Approach:** Regulations allowing 25.25m were amended as early as 2020; the 2025 launch represents a real progression
- **Policy Support:** Directly certified and promoted by the Ministry of Road Transport and Highways (MoRTH), with senior officials attending launch events..
- **Safety Enablers:** Mandatory ESP, EBS, and 360-degree cameras was instrumental in securing regulatory approval.

## Stakeholder Feedback:

- The Ministry of Road Transport and Highways (MoRTH): Proposed MV Act changes for articulated vehicle driving license; suggested speed relaxation
- The Society of Indian Automobile Manufacturers (SIAM): Supported the initiative – will bring significant transport cost savings



# India Road Train

## Details (Volvo + Delhivery)

- **Dimensions & Weight:** Total Length  $\leq 25.25\text{m}$  | Volume:  $144 \text{ m}^3$  (+50% vs. standard semi) | GCW – 55T



**Route:** Nagpur  $\rightleftharpoons$  Bhiwandi  
(high-volume trunk corridor).  
~760 km



# China – Masses and Dimensions Standard

GB 1589-2016 sets limits of dimensions, axle load and masses for motor vehicles, trailers and combination vehicles.

GB1589 first version in 1979, updated in 1989, 2004 and 2016

- Rigid+center-axle combination is 20 m, car carrier rigid with a center-axle trailer 22 m
- The Road Traffic Safety Law don't allow for dual-trailer road trains on designated Chinese roads
- Due to road safety related laws and regulations, further length expansion is still restricted.



# China Road Train Pilots - Focus on weight not volume

**Operations:** Restricted to fixed routes and dedicated lanes.



**Ganzhou**  
120 km



**Length: ≤26.00m,**  
**Weight: ≤73.00t**



**Hami**  
400 km



**Length: ≤26.00m,**  
**Weight: ≤91.00t**



**Wulanchabu-  
Erlianhaote**  
340 km



**Length: ≤22.00m**  
**Weight: ≤91.00t**







# HTC equally relevant for BEV



Ordos BEV tractor B-trailer + semitrailer, 45km intermodal Transportation  
Length:  $\leq 22.00\text{m}$ , Weight:  $\leq 74.00\text{t}$

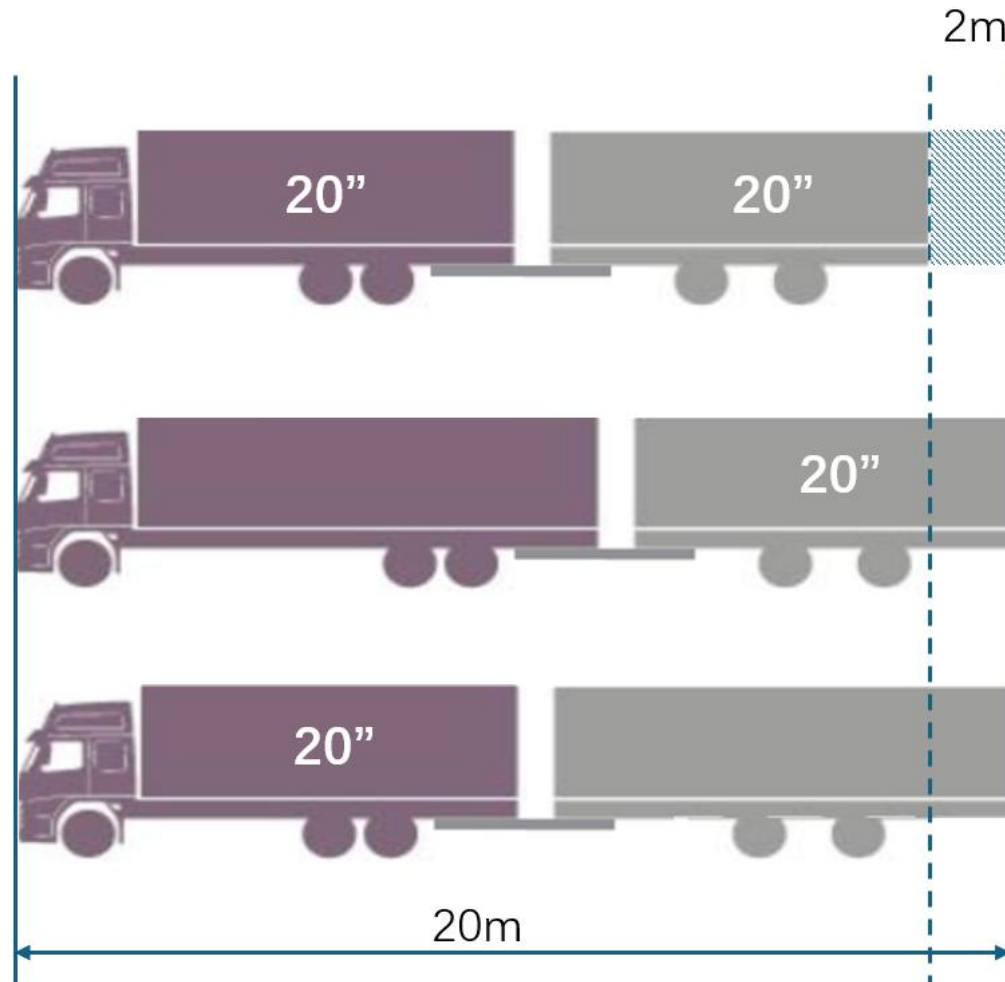


# Comparative Analysis — Legal Limits

Parameter		China (GB1589-2016 / Draft 2026)	India (CMVR / MoRTH Notifications)	Key Insight
Rigid Truck (2-axle)		<b>Total Length:</b> ≤ 12.0m <b>GVW:</b> ≤ 18.0t	<b>Total Length:</b> ≤ 12.0m <b>GVW:</b> ≤ 18.0t	Both align with global norms.
Rigid Truck (3-axle)		<b>Total Length:</b> ≤ 12.0m <b>GVW:</b> ≤ 25.0t	<b>Total Length:</b> ≤ 12.0m <b>GVW:</b> ≤ 28.5t	India allows higher GVW for 3-axle rigids (bulk cargo applications).
Truck-Trailer (Semi-trailer)		<b>Total Length:</b> ≤ 17.1m (standard) / 17.3m (45-ft container) <b>GVW:</b> 6-axle ≤ 49.0t	<b>Total Length:</b> ≤ 18.75m (standard semi) <b>GVW:</b> 6-axle ≤ 55.0t (with permit) / ≤ 49.0t (standard)	India's 55t permit system widely used; China strictly enforces 49t.
Road Train / Multi-axle Combo		<b>Total Length:</b> 20.0/22.0m (central axle trailer only / car carrier ) <b>GVW:</b> ≤ 49.0t	<b>Total Length:</b> 25.25m (legal) <b>GVW:</b> ≤ 55.0t , but axle-load limits apply (typically 12t per axle)	India has legalized 25.25m road trains with volumetric advantage at same GVW. China's road train pilot-only within restricted operations.



# Slow adoption - 2 m not utilized



# Challenges

Market players exploit loopholes by fitting oversized container boxes (150–220 m<sup>3</sup>) on compliant standard semi-trailer rigs to exceed the current volume limit of 95 m<sup>3</sup> of container box semi-trailers.

They also utilize gooseneck 17.5m platform trailers (standardly permitted only for indivisible goods) to transport high-volume cargo.

This practice leads to major transport safety issues and creates an unlevel playing field for competition.



**Oversized container box on a compliant semitrailer chassis**



**Gooseneck flat low bed semitrailer**



# Regulatory Updates

## India: Structured Progression from Central Motor Vehicle Rules(CMVR) to Commercial Launch

### Core Standard: CMVR, aligned with AIS-113

- **Origin (Sept 2020):** Need for road train provisions identified at 58th CMVR-TSC meeting. AIS-113 Panel tasked with technical requirements.
- **Core Framework (March 2022): GSR 200(E)** – road train provisions via **AIS-113 Amendment 6** (construction, braking, stability, conspicuity).
- **Refinements:** Amendment 7 (Load-Point Distance); **Amendment 8** (trial run guidelines: maneuverability, route selection, braking, speed limits, insignia, driver training, responsibilities).
- **Commercial Launch (Feb 2025):** Volvo FM 420 4x2 road train certified by MoRTH & ARAI(Automotive Research Association of India); operational on Nagpur–Bhiwandi route.

## China: Iteration and Deliberation

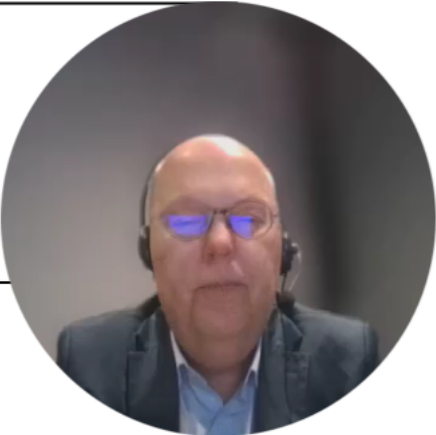
### Core Standard: GB1589-2016 (current) → GB1589-2026 (draft stage).

- **Denied:**
  - Proposal to increase GVW for new energy vehicles (remains at 49t), due to concerns over road infrastructure fairness and technological maturity.
  - Proposal of dual trailers road train definition included, due to Road Traffic Safety Law not changed
  - Proposal of aerodynamic optimized cab due to its transitional model to streamline cab
- **Relaxed:** Length limit for 45-ft container carriers increased to 17.3m (+0.2m) to enhance multimodal efficiency. Length limit of Streamlined Cab increased to 18.1m
- **Exemptions:** ADAS sensors and cameras are excluded from outer dimension measurements, supporting vehicle development.



# Future Outlook

	China	India
<b>Short Term (2026-2029)</b>	Monitor final GB1589-2026 publication. <b>GVW increase / Road Train unlikely.</b> OEMs focus on <b>lightweighting</b> (composite materials, aluminum chassis) to offset battery weight. ADAS hardware pre-installation will become standard.	Pending formalization: CMVR incorporation of road train provisions; type approvals for OEMs and trailer manufacturers; MoRTH route clearance process definition. Expansion: 25.25m road trains to extend to more corridors (Delhi–Mumbai expressway) as infrastructure matures.
<b>Long Term (2030+)</b>	<b>Road Train Growth</b> Potential for dedicated highway lanes or night-time operation windows for doubles trails in provincial level.	Formal CMVR amendments, type approval issuance, route clearance process. Expressway network expansion (Bharatmala/Gati Shakti): Directly enables broader HPV deployment. Potential for longer combinations: Once 25.25m proves successful, India may consider EU-style longer combinations (e.g., 32m).
	<b>Energy &amp; Propulsion Integration</b> Will shelved GVW increase push hydrogen and battery-electric trucks toward <b>swap stations</b> and extreme lightweighting?	



# Conclusion

- **China** remains in a "**compliance rectification**" phase. Resolving illegal flatbed operations is prerequisite for high-capacity transport adoption. **Regulatory revision lagging behind technological capability.**
- **India** has moved from pilot to **commercial operation** (Feb 2025). The framework is **standards-led, infrastructure-tied, and volumetrically focused** (55t GVW cap, 25.25m length, +50% volume).



# Appendix: Data Sources

- Indian HPV research, Smart Freight Center India Satish Kedar Nath, April 2026
- ARAI Presentation extract — CMVR-TSC 62nd meeting, pp. 67-69. Source: [https://www.acma.in/uploads/docmanager/MoM\\_62\\_CMVR-TSC.pdf](https://www.acma.in/uploads/docmanager/MoM_62_CMVR-TSC.pdf)
- Volvo Trucks India press release, 15 February 2025. Source: <https://www.volvotrucks.in/en-in/news/press-releases/2025/feb/India-first-Road-Train-solution.html>
- SATRAC: Road Train Trailers — India's First Long Combination Vehicle. Source: <https://www.satrac.com/satrac-road-train-trailers-indias-first-long-combination-vehicle/>
- Ministry of Road Transport and Highways (MoRTH), India – Width Measurement Amendment, December 2025.
- China GB1589-2026 Draft for Comments Analysis, March 2026.
- China Pilot Program Details – Ganzhou, Aksu, Ordos B-double Trials.
- Industry Analysis – Illegal 17.5m Flatbed Operations in China.