

Energy Efficiency Policy Challenges for 2026

— Overseas Policies Swayed by Considerations of Industrial
Competitiveness and Political Agendas

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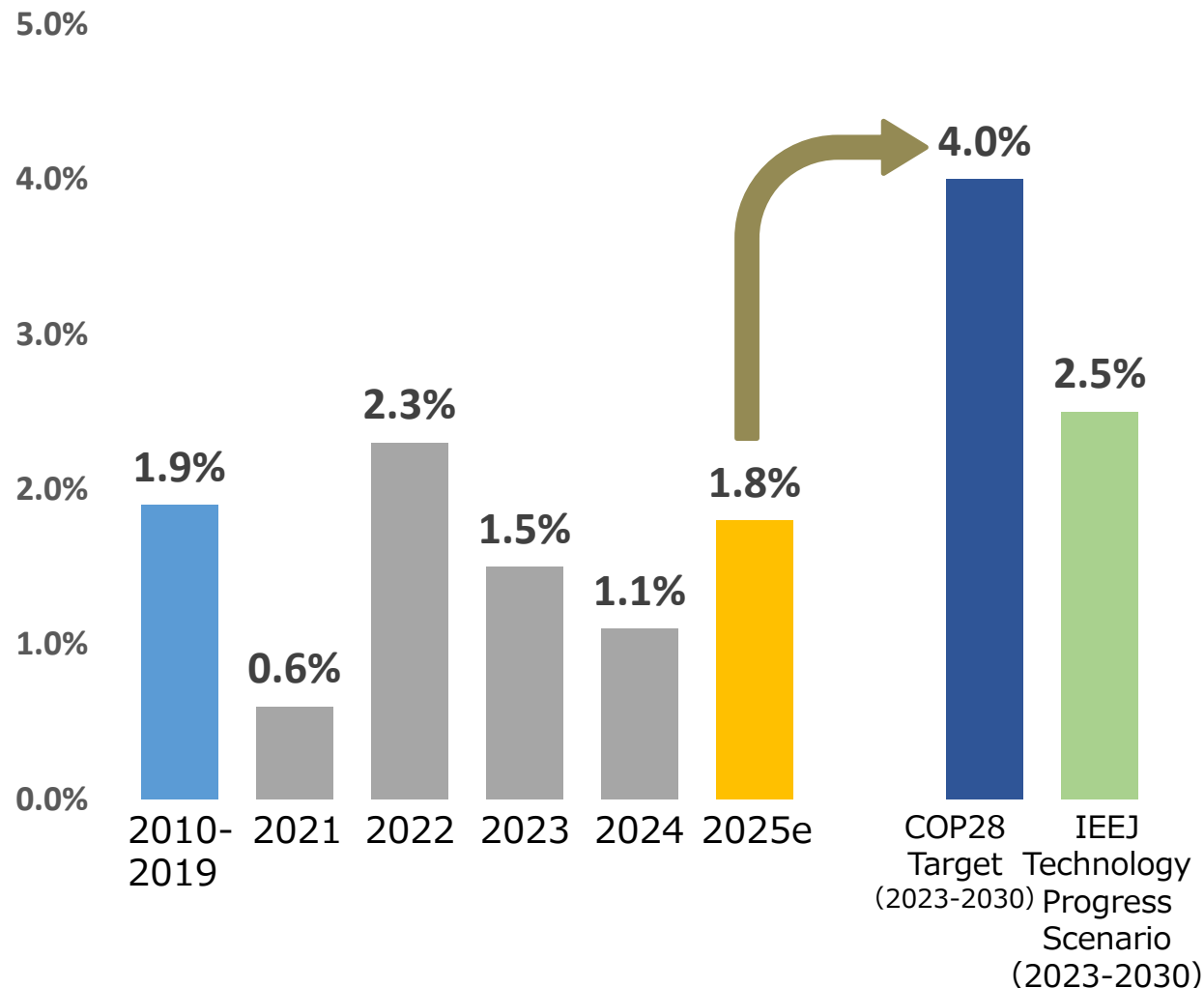
Energy Efficiency Group

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The Institute of Energy Economics, Japan (IEEJ)

Since 2022, global primary energy consumption per unit of GDP has improved at an average annual rate of 1.5%

Trends in Global Improvements in Primary Energy Intensity



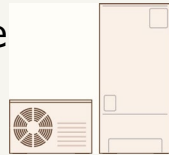
- Global primary energy intensity improved by around 1% year-on-year in 2024, and is projected to improve by 1.8% in 2025.
 - ✓ In 2025, improvement rates are expected to be particularly high in China (3.5%) and India (4.0%).
 - ✓ In contrast, following several years of strong performance after the 2022 energy crisis, improvement rates in the United States and the European Union are projected to fall below 1%.
- The current pace of improvement remains well below the target presented at COP28, which calls for annual improvement of more than 4% by 2030.
 - ✓ Achieving a 4% annual improvement would require not only technological and operational efficiency gains, but also large-scale electrification and accelerated deployment of renewable energy.

Note: Improvement rates refer to changes in GDP-based primary energy intensity (PPP, 2024 base year). The IEEJ Technology Progress Scenario uses 2022 as the base year (PPP). Sources: IEA (2025) Energy Efficiency Report 2025; IEEJ (2025) IEEJ Outlook 2026.

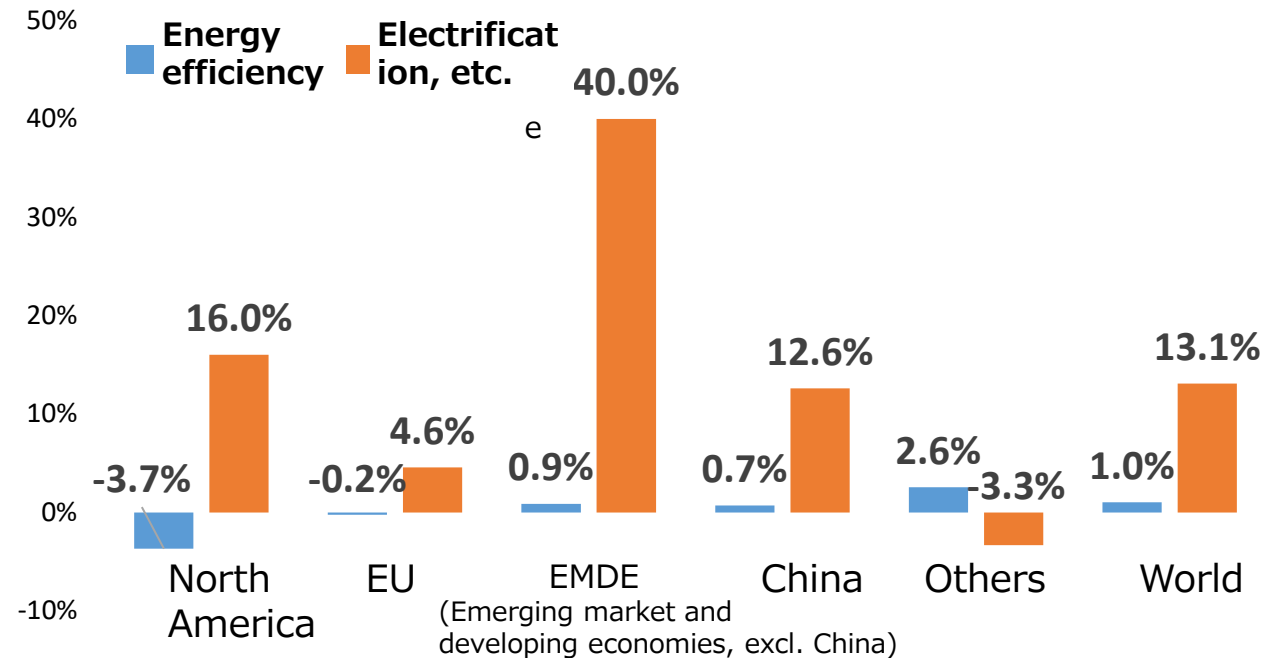
Slowing Energy Efficiency Investment and Expanding Electrification/Renewable Energy Investment

- In 2025, global demand-side energy investment is projected to increase by **6.1%** year-on-year.
 - ✓ Energy efficiency investment is expected to increase by **only around 1%**, indicating a clear slowdown.
 - ✓ **Electrification (e.g., EVs, heat pumps)** and **renewable energy (e.g., residential solar PV)** investment is projected to surge by **13.1%**.

Energy Savings Effects of Electrification and Renewables

- (Electrification) Heat pump water heaters can reduce primary energy consumption for water heating by approximately 28% compared with condensing gas water heaters (Heat Pump & Thermal Storage Technology Center of Japan).
 
- (Renewables) The expansion of renewable power generation reduces primary energy consumption relative to fossil fuel-based generation, as renewables are associated with lower primary energy conversion factors.

Regional Distribution of Investment (2025, Year-on-Year Change)



Note: "Electrification, etc." refers to investments in demand-side electrification and renewable energy. Figures for 2025 are estimates. In emerging and developing economies, the rapid deployment of new air conditioners is a major driver of electrification.

Source: IEA (2025), World Energy Investment

Trends Driving Energy Efficiency, Electrification, and Renewable Energy Investment Since 2024

Industry

Driven by China's policy measures, pull-forward demand in the United States, and industrial revitalization support in Europe, industrial-sector investment is projected to increase by 25% year-on-year.

- **Europe:** In 2025, investment is projected to recover from weak performance in 2024, supported by industrial revitalization and support programs.
- **United States:** Investment has increased continuously since 2020, with an average annual growth rate of approximately 20%. In 2025, pull-forward demand ahead of the early termination of the Inflation Reduction Act (IRA) is expected to further boost investment.
- **China:** Strengthened energy efficiency targets for 2024–2025 and sector-specific policy measures for priority industries have supported continuous growth since 2023 (from USD 3.5 billion in 2023 to USD 11.6 billion in 2025).

Transport

Projected to reach a record USD 330 billion, with electrification playing a leading role.

- **Europe:** Approximately one in five vehicles sold is an EV. After a decline in 2024 due to subsidy reductions (notably in Germany and France), investment is expected to recover in 2025.
- **United States:** Higher interest rates have increased financing costs, and the supply of affordable EV models remains limited. Although growth has slowed, investment is still expected to increase in 2025.
- **China:** Vehicle replacement support policies have been extended through 2025, and EVs are projected to account for around 60% of new vehicle sales in 2025.
- **Asia:** Investment is expanding rapidly, driven by strong policy incentives and tax benefits, particularly in India, Indonesia, and Vietnam.

Building

Declining construction demand is expected to be offset by increased electrification investment, resulting in a 3% year-on-year increase.

- **Europe:** In 2024, reduced subsidies for energy-efficient renovations were offset by ongoing projects and pull-forward demand, keeping investment relatively stable. However, a decline is expected in 2025.
- **United States:** Despite the scheduled early termination of the IRA, front-loaded demand prior to the phase-out of support measures is expected to sustain energy efficiency investment in 2025.
- **China:** Amid a prolonged real estate downturn, the government has strengthened regulations and subsidy programs—such as support for replacing energy-efficient appliances—resulting in two consecutive years of investment growth since 2024.

Europe: Energy Policies Shaped by Industrial Competitiveness, Consumer Cost Concerns, and Political Considerations

Germany: A Shift Toward a More Pragmatic, Industry-Conscious Approach

- From January 2024, new heating systems in newly developed areas have been required to meet a 65% renewable energy threshold.
- Under the Merz administration (inaugurated on 6 May 2025), there is growing discussion of abolishing the 65% renewable requirement.

UK: Policy Directions Swayed by Political Agendas

- Policies include: **banning fossil fuel boilers (gas, etc.) in new heating systems from 2035, prohibiting rental of energy-inefficient apartments, and banning petrol/diesel vehicles (2030)**
- In 2023, former PM Sunak (Conservative) announced **postponements and cancellations**
- The Starmer government (Labour, inaugurated July 2024) reaffirmed its commitment to **strengthening related policies**
 - ✓ Accelerated ban on petrol/diesel vehicles (2035→2030), etc.

EU: New Industrial Policy — Clean Industrial Deal (CID) (February 2025)

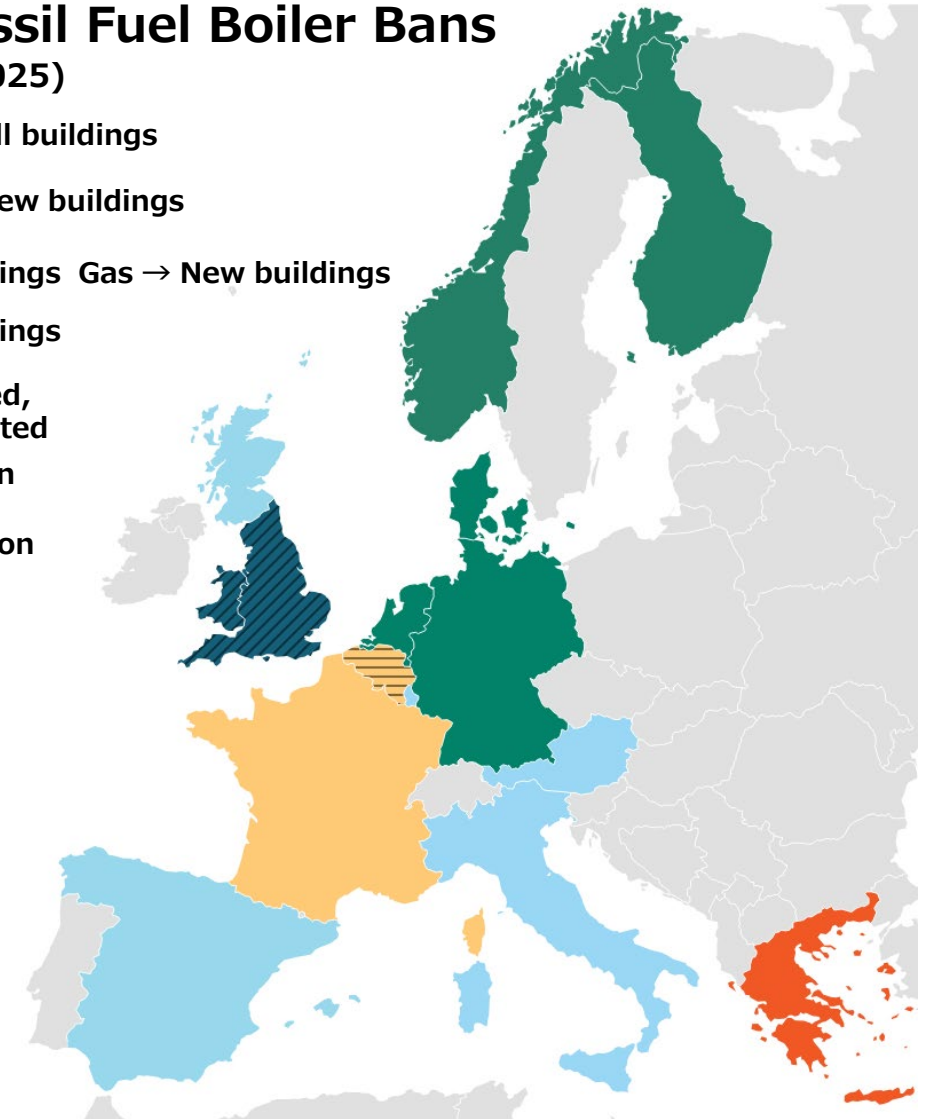
- A policy package aimed at **improving energy efficiency** and **reducing costs** through renewable energy adoption, electrification, decarbonization, and the transition to clean technologies, addressing high costs, intensifying international competition, and regulatory complexity facing the manufacturing sector.
- Supports **decarbonization and energy conservation** in industries where **high energy costs** are a **bottleneck**.

Europe: Diverse National Responses to the Complete Phase-Out of Fossil Fuel Boilers by 2040

- As Europe advances **non-fossil fuel transition** and **electrification** (e.g., shift to heat pumps), regulations on fossil fuel boiler installations are being considered and implemented
- For existing buildings, phased transitions are being strengthened, such as during future replacements or major renovations
- However, the **difficulty of implementation** and **costs vary significantly** depending on region and building structure, making policies that account for economic viability, resident burden, and technology/infrastructure (power supply, heat pump adoption, insulation retrofitting, etc.) essential
- Countries are adapting flexibly to reflect their realities
 - ✓ France: Building environmental regulations that, through primary energy evaluation, effectively make heat pumps the only option
 - ✓ UK: New homes in England to target 75–80% CO2 reduction vs. current regulations, requiring non-fossil heating/hot water systems (Future Home Standard)
 - ✓ Germany: The law requiring 65% renewable or district heating for new heating systems is itself under discussion for amendment

Status of Fossil Fuel Boiler Bans (As of November 2025)

- Oil & Gas → All buildings
- Oil & Gas → New buildings
- Oil → All buildings Gas → New buildings
- Oil → All buildings
- Ban announced, not yet legislated
- No information
- Varies by region



US: The Trump Administration Aims to Ease Energy Efficiency Regulations and Reduce Consumer Cost Burden

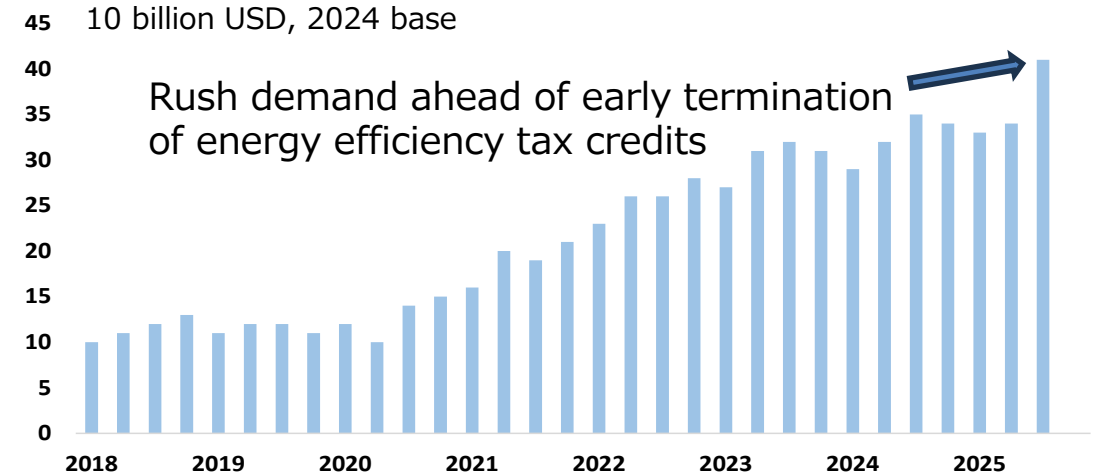
- The Trump administration is shifting toward abolishing energy efficiency standards and deregulating, aiming to reduce cost burdens by easing efficiency mandates

Trump Administration Energy Efficiency Developments

- ✓ The U.S. Department of Energy (DOE) announced the review and repeal of 47 regulations, including appliance energy efficiency standards (2025.2)
- ✓ EV purchases, residential energy efficiency retrofits, and heat pump equipment **tax credit deadlines moved up to the end of 2025** (One Big Beautiful Bill Act, 2025.7)
- ✓ **Energy Star program was reported to potentially be abolished** (2025.5), but subsequently, due to opposition from industry and practitioners, **EPA is reportedly reconsidering**(NYT, 2025.11)
- ✓ The House passed multiple bills aimed at weakening energy efficiency programs, abolishing manufactured housing standards, and partially eliminating housing subsidies, building codes, and job training programs (2025.11)

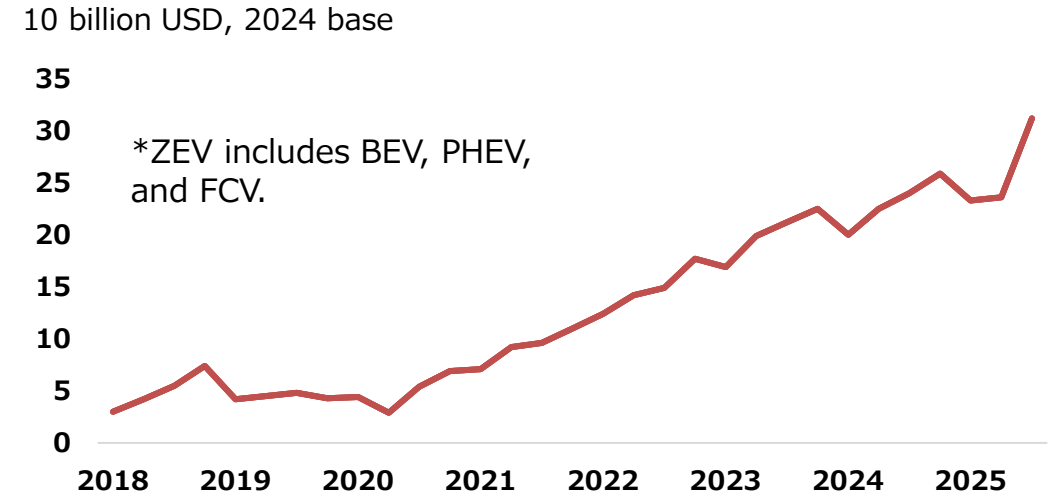
Source: [Clean Investment Monitor: Q3 2025 Update – Rhodium Group](#)

Trends in Clean Investment* in the U.S. Residential Sector



*Household/corporate clean power generation and storage, building electrification, etc.

Trends in Consumer Spending on Zero Emission Vehicles* in the U.S.



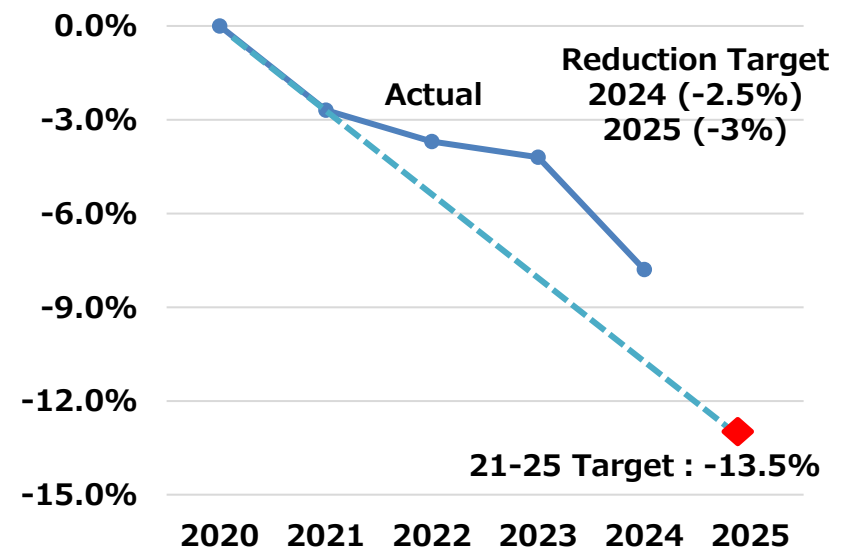
China: Strengthening Energy Efficiency and Decarbonization Policies to Achieve 14th Five-Year Plan Targets

- Mandatory targets have been set since the 11th Five-Year Plan (2006-2010) as part of energy efficiency efforts
- Progress fell behind in 2022 and 2023, making it difficult to achieve the 14th Plan targets, leading to strengthened policy measures. The 2024-2025 Energy Efficiency and Carbon Reduction Action Plan sets targets to reduce energy consumption per GDP by approximately 2.5% and CO2 emissions by approximately 3.9%
 - ✓ Covers multiple sectors, including industry, buildings, transport, and equipment
 - ✓ Stimulates energy efficiency improvements and domestic demand through subsidies and low-interest loans for replacing aging and low-efficiency equipment
- Meanwhile, the evaluation method for local governments' 14th Plan energy intensity targets was changed, easing pressure to achieve energy efficiency targets
 - ✓ Nuclear and renewable energy, which show high energy consumption growth, were excluded from intensity calculations, and green electricity certificates were introduced
- In October 2025, the basic policy for the 15th Five-Year Plan starting in 2026 was decided

Energy Efficiency Targets and Actuals of China's 14th Plan

Five-Year Plan		11th	12th	13th	14th
Period (Year)		06-10	11-15	16-20	21-25
Energy Consumption per GDP Intensity	Target	▲20.0%	▲16.0%	▲15.0%	▲13.5%
	Actual	▲19.1	▲18.2	▲13.3	—

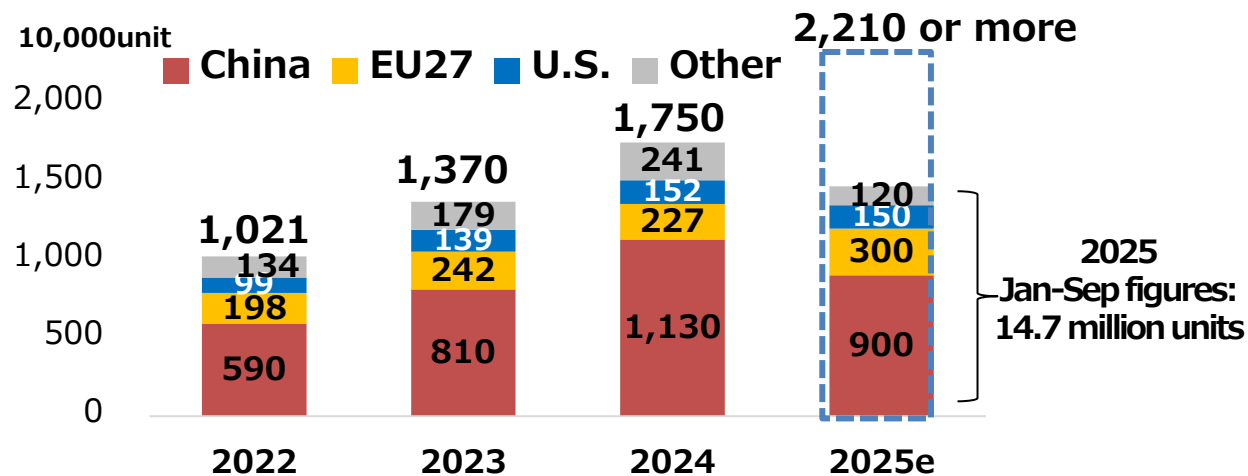
Energy Efficiency Targets and Actuals of China's Five-Year Plans



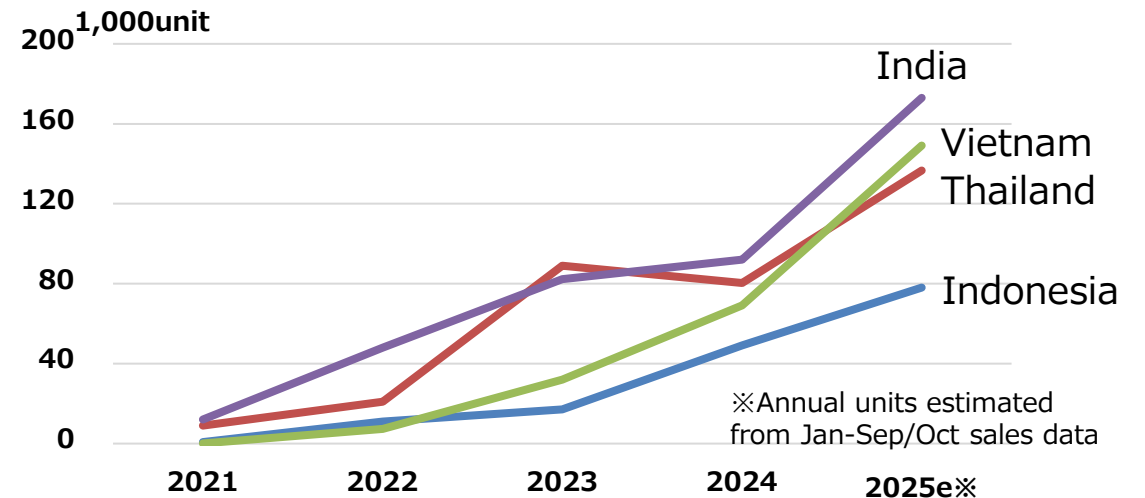
In 2025, Global EV Sales Expected to Exceed 22.1 Million Units

- Global EV sales in 2025 are expected to exceed 22.1 million units
- China: Purchase subsidies and new energy vehicle production mandates are expected to bring EVs to half of all vehicle sales in 2025
- Europe : New incentives, low-cost models, CO2 regulations, etc. led to a 26.7% year-on-year increase
 - ✓ Germany introduced corporate tax incentives (Jul 2024); the UK implemented ZEV targets for automakers and average CO2 emission regulations under its vehicle emissions trading scheme (progressively strengthened from 2024)
- In India, Vietnam, Thailand, and Indonesia, EV sales are surging due to strong policy incentives and tax benefits
- In addition to the influx of affordable imported EVs (especially Chinese vehicles), local production by Chinese manufacturers began in Thailand and Indonesia from 2024
- In Thailand, rising household debt has tightened lending standards, reducing overall vehicle sales. The government is promoting EV adoption and attracting production investment, gradually strengthening local production requirements

Global EV Sales Trends



EV Sales Trends in Emerging Asian Countries

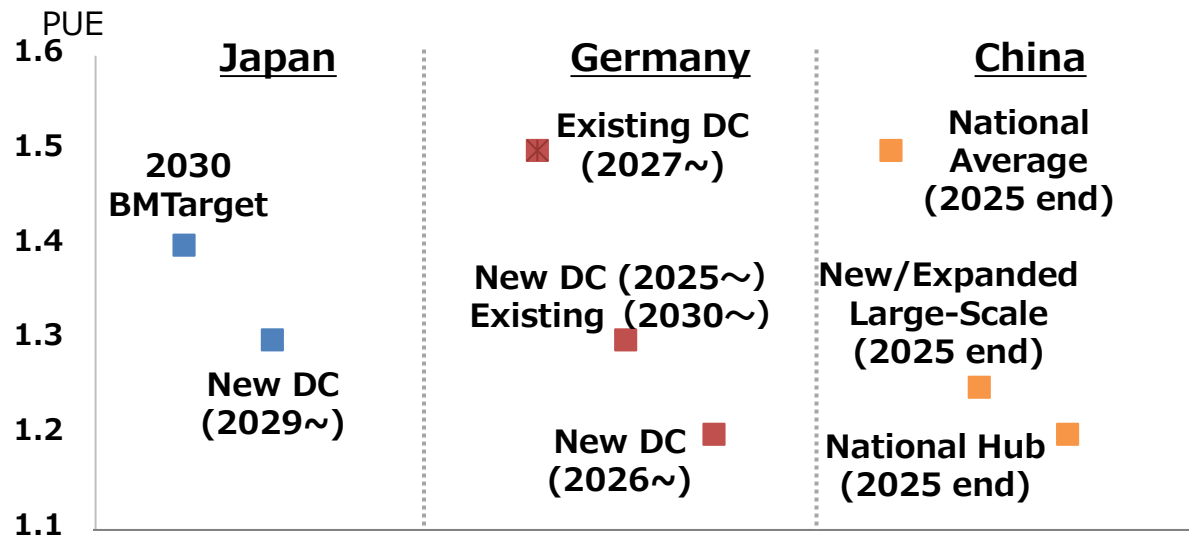


Note: EV includes BEV, PHEV, and FCV. Up to 2024, IEA data; 2025 data covers January to September. References include national automobile associations and market reports. Vietnam 2025 data references VinFast EV sales. Source: Global EV Data Explorer and various data sources

Data Centers and AI: Energy Efficiency Improvements and Strengthened Environmental Requirements

- Regarding data centers (DC), efficiency requirements beyond Power Usage Effectiveness (PUE) are increasingly being demanded, such as waste heat utilization and water usage efficiency
- Japan: DC industry has been subject to energy efficiency benchmarks since 2022; PUE targets for new DCs and operator average PUE to be established and published (2026.4~)
- Germany: Requires DC operators to disclose waste heat utilization, renewable energy usage, and energy consumption
- China: Strengthened PUE targets for new and existing DCs (2024.7)

Regulatory Values for DC Energy Consumption Efficiency



- Regarding AI energy usage, AI model scale (number of parameters), data volume, hardware efficiency, and power mix (renewable energy ratio, etc.) are major factors
- The EU mandates reporting of energy consumption for general-purpose AI models (AI Act, 2024)
- Standardization, labeling, and rating initiatives are becoming increasingly active, led primarily by standards organizations and industry groups

Initiatives on AI Energy Consumption and Environmental Requirements

- | | |
|----------------|---|
| Private Sector | <ul style="list-style-type: none"> ● A standardization framework for environmental efficiency across the entire AI lifecycle (data centers, cloud, networks, etc.) (International Telecommunication Union) ● AI Energy Score (AI model energy efficiency label): Measures and compares energy and power consumption per model training/inference (Salesforce) |
| Regulation | <ul style="list-style-type: none"> ● EU AI Act (enacted Aug 2024) requires reporting on transparency of AI energy consumption and environmental impact. <ul style="list-style-type: none"> ✓ Providers of general-purpose AI models (GPT, Gemini, and other large-scale models) are required to submit technical documentation, including energy consumption (phased implementation) |

Source: DIRECTIVE (EU) 2023/1791 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast), Gesetz zur Steigerung der Energieeffizienz in Deutschland, Special Action Plan for Green and Low-Carbon Development of Data Centers

Japan: Steady Progress in Energy Efficiency Policy — Policy Consistency and Sustained Investment Are Key



Key Developments in 2025

- The 7th Basic Energy Plan outlined the direction of 'expanding non-fossil fuel transition and electrification' and 'thorough energy efficiency' (Feb 2025)
- **Mandatory compliance with energy efficiency standards for all new buildings began (Apr 2025)**
 - ✓ From 2030 onward, new construction aims to achieve ZEB^{※1} and ZEH^{※2} level performance
- Strengthened support for introducing energy efficiency and non-fossil fuel conversion equipment
 - ✓ New subsidy categories were established, strengthening support for equipment manufactured by companies committed to GX requirements^{※3} and equipment whose energy efficiency performance significantly exceeds conventional levels
- **Strengthened supply chain collaboration**
 - ✓ Support for equipment upgrades where supply chain companies cooperate in developing and implementing energy efficiency plans
- **Draft guidelines prepared for energy efficiency and productivity improvement through digital technology and AI**

※1 ZEB(Zero Energy Building) : A building with net-zero or less annual primary energy consumption; 50% or more reduction from standard primary energy consumption excluding renewables

※2 ZEH(Zero Energy House) : A house with net-zero or less annual primary energy consumption; 20% or more reduction from standard primary energy consumption excluding renewables (35% or more under the new definition)

※3 Participation in the next GX League, formulation of policies on corporate growth, including improving cost competitiveness and capturing overseas markets

Developments from 2026 Onward

	2025				2026											
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Additional Energy Saving Measures for Data Centers	Public comments				enforcement (26.4~)											
	↔				→											
					<ul style="list-style-type: none"> • New DCs after 2029: PUE 1.3 or below • New DCs after 2025: Disclosure of DC name, PUE, etc. • Tenant-type DCs added to PUE calculation scope 											
Rooftop Solar PV	Public comments				Enforcement (26.4~)											
	↔				→											
					<ul style="list-style-type: none"> • Report qualitative targets in medium-term plan (from FY2026 submissions) • Report available roof area, installed/planned area & capacity in periodic reports (from FY2027 submissions) 											
Gas Water Heater FY2028					Public comments				Aiming to implement from April 26							
					↔				→							
									<ul style="list-style-type: none"> • Require 3% efficiency improvement vs FY2022 for manufacturers (85.0% → 87.5%) 							
Revision of ZEH Definition					○9/26 • New definition published				Scheduled to begin operation in April 2027							
									→							
									<ul style="list-style-type: none"> • Create Q&A and promote awareness • Implement building life cycle carbon (LCCO2) assessment, encourage voluntary reduction (~2028) 							
Building LCA									→							
									<ul style="list-style-type: none"> • Create & publish calculation/labeling rules and evaluation criteria (~2027) 							

Key Points to Watch in 2026 Energy Efficiency Policy

- Regarding the EU, attention is focused on the specific measures and follow-up actions of the CID. Additionally, the deadline for EU member states to submit their National Building Renovation Plans is December 2025, and the policies of each country regarding non-fossil fuel transition and energy efficiency renovation are also noteworthy.
- Regarding the U.S., the impact of the early termination of energy efficiency tax incentives and the backlash from rush demand in 2025 is expected to become pronounced. On the other hand, regarding policy shifts such as the abolition and relaxation of energy efficiency regulations, there is a possibility of a rollback due to opposition from industry, and state governments may also proceed with their own regulations, making it necessary to closely follow future developments.
- China: As the 15th Five-Year Plan (2026-2030) begins, new energy efficiency-related targets and policies should be closely monitored. In particular, since major subsidies for equipment replacement and EV purchases all expire at the end of 2025, attention is on whether new follow-up measures will be implemented.
- For Japan, concrete policies are being developed based on the 7th Basic Energy Plan. In 2026, additional measures on data center energy efficiency, new standards for gas water heaters, and other initiatives are planned. Also noteworthy are energy efficiency and regional partnerships involving local financial institutions, strengthened supply chain collaboration, and promotion of energy efficiency through digital technology and AI.