

Climate change mitigation Policy Progression Indicator (C-PPI) -- a tool for measuring progression of climate change mitigation at national levels

**37 Action Indicators & 6 Outcome Indicators to measure
progression of climate change mitigation policies**

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PROGRAMME

Introduction: The latest publication: 37 Action indicators and 6 Outcome indicators to measure progression of climate mitigation policies

Dr. Yasuko Kameyama, National Institute for Environmental Studies

Measuring progress of policies to promote renewable energy

Prof. Yukari Takamura, Nagoya University

Measuring progress of policies to improve energy efficiency of fossil fuel fire power plants

Mr. Akihisa Kuriyama, Institute for Global Environmental Strategies (IGES)

Presentation on the latest activities of Climate Action Tracker:

Mr. Frederic Hans, NewClimate Institute

Discussion Comments from perspective of Environment Performance Indicator

Dr. Angel Hsu, Yale-National University of Singapore

Q&A from floor

Background

Paris Agreement : The NDCs are not legally binding by nature

The NDCs are nationally determined, emission reduction level insufficient to reach the long-term goal

- Are emission mitigation policies necessary to reach the NDCs being implemented?
Are national emissions on the right path towards the long-term goal?
Checking process has become more important in the post-2020 period.

Research questions:

- ✓ How can we measure “progression” of countries’ emission mitigation policies, when countries emission fluctuate by a variety of factors, some of which has nothing to do with policy implementation?
- ✓ How can we assess level of NDCs by a common measurement, but fully taking into account countries’ national circumstances and equity considerations?
- ✓ What kind of data can the COP request each country to deliver in order to make simple and appropriate assessment on the country’s effort?

Aim of the research project

To develop a new indicator to measure countries’ effort to mitigate GHG emissions from the countries, and apply the indicator to countries’ current activities.

Climate change mitigation Policy Progression Indicator (C-PPI) -- a tool for measuring progression of climate change mitigation at national levels

(funded by Environmental Research and Technology Fund of Ministry of the Environment, Japan 2-1501)

Research project participants

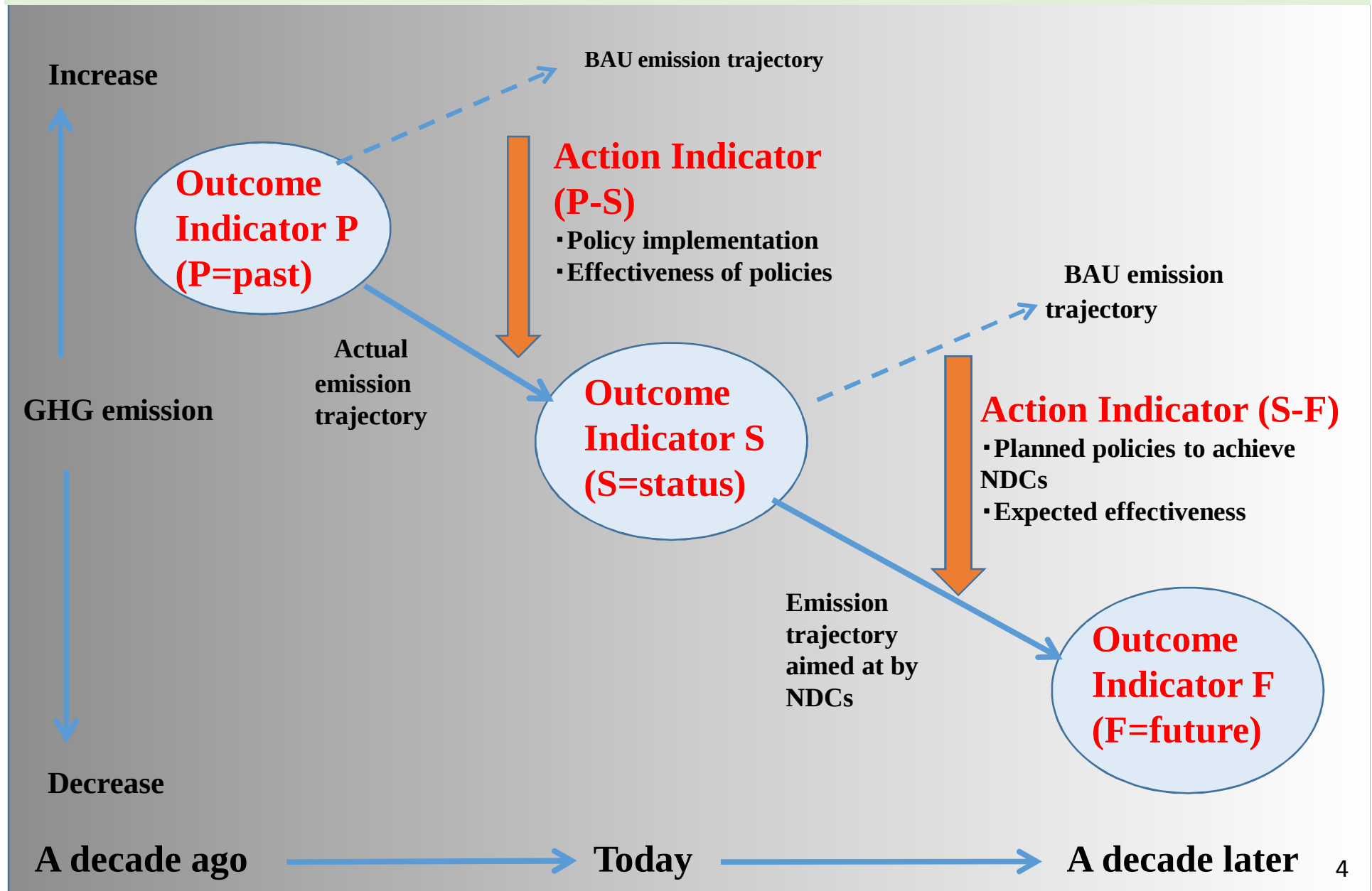
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- Waseda Univ. T. Arimura, H. Iguchi

Research project collaborators

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- Yale University: Angel Hsu
- NewClimate Institute: Takeshi Kuramochi
- The University of Texas at Austin: Joshua Busby
- Natural Resources Defense Council: Luan Dong



Structure of C-PPI



Four intermediate goals for all countries

What kind of policies are effective? → The most effective set of policies is likely to be different according to respective countries' national circumstances.

Meanwhile, major national circumstances can be absorbed by introducing four goals:

GOAL 1: Decarbonization of energy



To understand consequences between Action and Outcome

GOAL 2: Improvement of energy efficiency



To reflect equity considerations onto Actions

GOAL 3: Minimizing demand for energy service



To recognize which of the four Goals needs to be addressed more in future years

GOAL4: Sequestration by forests and non-CO2 GHG gases



6 Outcome Indicators

Goals	Outcome indicators	Equity consideration
Goal 1. Decarbonization of energy	1. CO ₂ emission/Total Primary Energy Supply(TPES)	Developed countries should aim at lower levels than developing countries.
	2. Renewable energy supply/TPES (%)	Developed countries should aim at higher levels than developing countries.
Goal 2. Improvement of energy efficiency	3. Total energy consumption/Gross Domestic Products (GDP)	Developed countries should aim at lower levels than developing countries
Goal 3. Minimizing the demand for energy service	4. Total energy consumption/capita	Developing countries could increase the rate up to a certain level, and then start declining it.
Goal 4. Sequestration and non-CO2 gases	5. Annual rate of change in land covered by forests (%)	Geographic and climatic circumstances shall be taken into account.
	6. Methane, HFCs, etc. / capita	

37 Action Indicators

Goal	Category	Action Indicators
Goal 1: Decarbonization of energy	Promotion of renewable energy	1. The country sets concrete targets for renewable energy that are sufficient to reach its long-term goal. 2. The country has regulatory and financial supports, such as RPS and FIT, for the enhancement of renewable energy at a sufficiently high level to allow for the rapid diffusion of renewable energy. 3. The country has policies to remove barriers against the enhancement of renewable energy, particularly in the area of electricity grids, including the use of smart grids and demand responses.
	Decarbonization of other energy sources	4. The country sets an emission intensity target on power plants satisfying at least one of these criteria: (i) 0.612 kCO₂/kWh for coal-fired power plants, (ii) 0.303 kgCO₂/kWh for gas-fired power plants, and (iii) 0.256 kgCO₂/kWh for the entire electricity sector. The country could implement an ETS that is as stringent as the intensity target. 5. The total number of a country's demonstration and commercialized CCS projects during a given assessment period is larger than it was during the former assessment period. 6. The country has a carbon tax or other effective tax rates for the power sector at a rate of at least US\$5/tCO₂.
	(optional) Nuclear power	7. The country fulfills safety standards SSR-2/1&2 of the IAEA for nuclear power plants. 8. The country has a compensation scheme and other necessary procedures in case of accidents.
	Decarbonization in transportation sector	9. The country has financial supports, such as subsidies and tax incentives that are effective enough to provide incentives for consumers to purchase non-fossil fuel vehicles. 10. The country supports R&D on technologies related to next-generation vehicles, such as fuel-cell cars and light-weight batteries, with the aim of having 90% of all vehicles on the road be low-carbon by 2050. 11. The country has transportation rules such as priority lanes and parking spaces that give preferential treatment to carbon-free cars.

37 Action indicators (continue)

Goal	Category	Action Indicators
Goal 2: Improvements in energy efficiency	Industry sector	12. The country sets quantitative GHG emission targets or energy-efficiency targets for industries that are ambitious enough to reach its long-term emission reduction goal. 13. The country has mandatory reporting requirements and an auditing system for industries to monitor the use of energy and GHG emissions. 14. The country has an effective tax covering the industrial sector, with a rate of at least US\$5/tCO₂.
	Building sector	15. The country has energy performance standards for buildings that are ambitious enough to achieve its long-term emission reduction goal. 16. The country has subsidies and other supports to promote the sales of ZEBs and ZEHs so that the cost of building these types of structures will be almost equal to that of building traditional structures if the economic returns gained through energy savings in future years are accounted for. 17. The country has energy performance standards and labeling for electricity and other energy-related utilities for household and offices that are ambitious enough to follow an emission trajectory towards the country's long-term goal.
	Transportation sector	18. The country has tax credits or other kinds of financial supports for purchases of fuel-efficient vehicles, so that all gasoline-fueled vehicles (except heavy-duty trucks) currently in use have an efficiency of more than 30 km/L of gasoline by 2020. 19. The country has regulations against use of inefficient vehicles. 20. The country implements policies to improve fuel efficiency of aircraft and newly built ships at an annual rate of 2% through 2050.

37 Action Indicators (continue)

Goal	Category	Action Indicators
Goal 3: Decreasing demand for energy service	Industry sector	21. The country sets an absolute national target for reducing/ limiting energy consumption to achieve its long-term goal.
		22. The country promotes the effective use of waste heat, including combined heat and power (CHP) and partnerships in industrial parks.
		23. The country utilizes life cycle assessment of products so as to minimize energy consumption during a product's life cycle.
	Building sector	24. The country has campaigns to raise awareness and educational programs so that at least 80% of the public recognize the risks of climate change, as measured by public opinion polls.
		25. The country promotes introduction of visualization technologies (e.g., smart meters and other measures) so consumers can see the level of energy consumption in the building sector.
		26. The country has effective tax rates for the building sector, which are greater than US\$5/tCO ₂ .
	Transportation sector and urban planning	27. The country has policies to reduce overall demand for mobility.
		28. The country has effective tax rates on fuels for vehicles, which are greater than US\$50/tCO ₂ .
		29. The country promotes urban development planning towards low-carbon cities.
Goal	Category	Action Indicators
Goal 4: Non-CO2 GHGs and forestry	(optional) Methane	30. The country has regulations to prohibit emissions from waste landfill sites.
		31. The country has policies to reduce emissions from the agriculture sector.
		32. The country has policies to reduce emissions from fossil fuel extraction plants.
	(optional) HFCs and other F-gases	33. The country has regulations related to the production and use of HFCs with the aim of meeting the country's long-term goal.
		34. The country has regulations related to collection and destruction of HFCs and other F-GHGs contained in discarded products.
	(optional) LULUCF	35. The country sets absolute targets for increasing forest area.
		36. The country promotes forest management so that the area of managed forests increases by at least 1% annually.
		37. The country regulates illegal logging and promotes the wise use of labeled sustainable wood products.

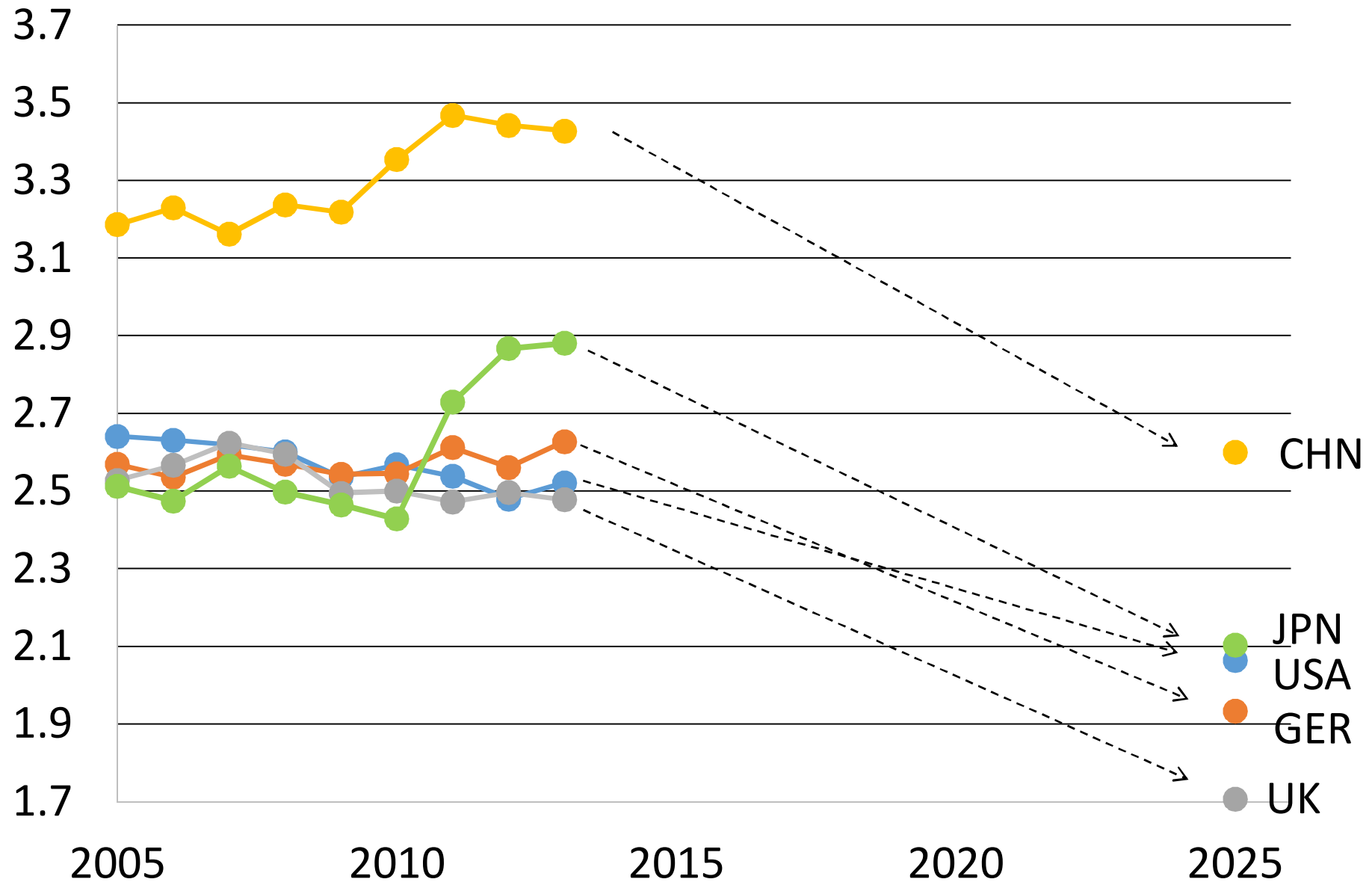
Rating Action Indicators

- ✓ Rating is made between A+ and C-.
- ✓ One rank upgrading when local initiatives surpass national policies
- ✓ Applicable to all countries: Developed countries are expected to obtain higher ranks than developing countries.

Rating	Criteria
A+	“Yes” for all three indicators, plus additional effort in SF compared to PS
A	“Yes” for all three indicators
AB	B at the national level, plus additional effort at the local level
B	One “No” and two “Yes” responses
BC	C at the national level, plus additional effort at the local level
C	Two “No” and one “Yes” responses
C-	“No” for all indicators in the category

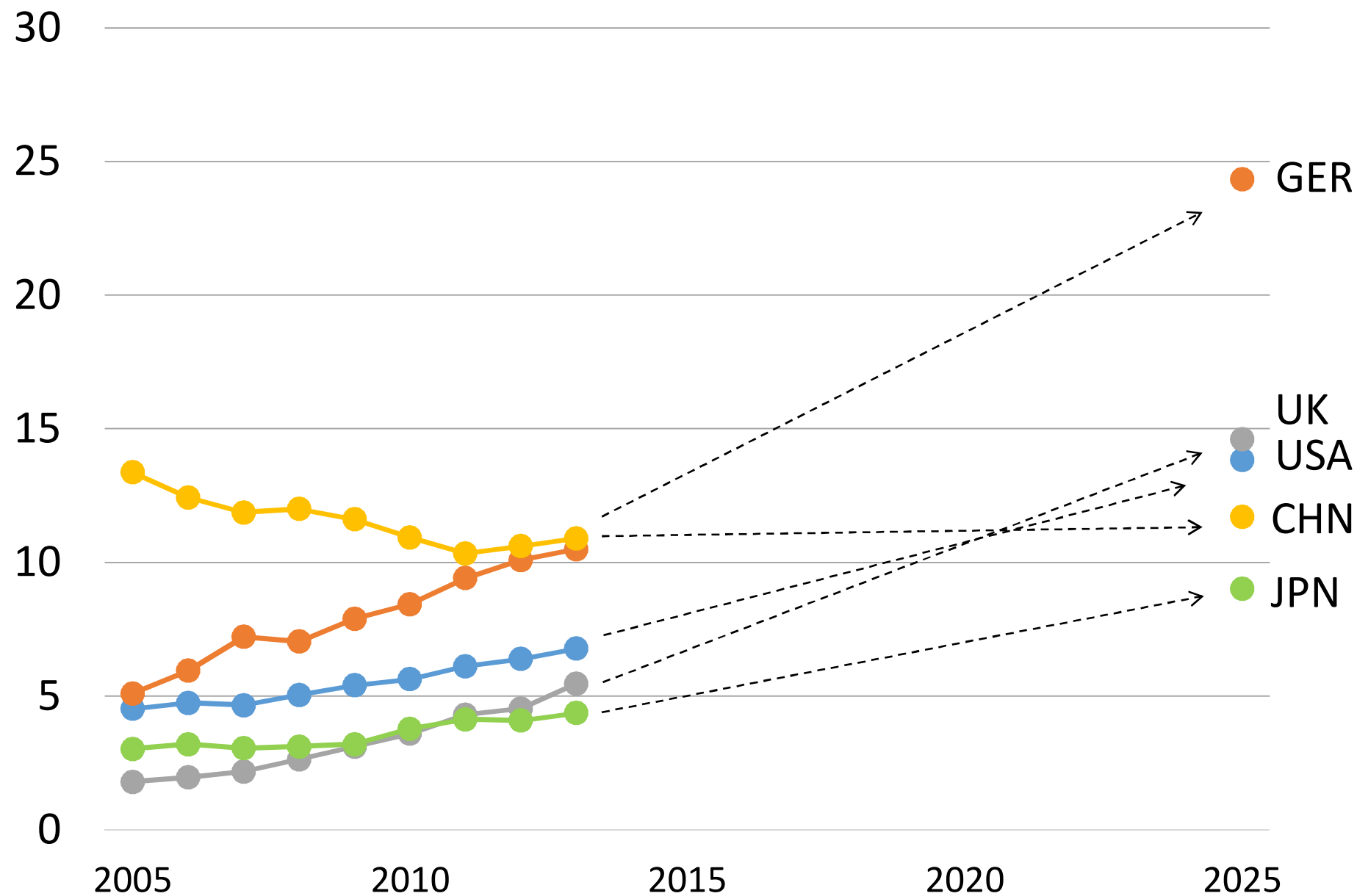
Outcome Indicator 1. CO₂/TPES

(tCO₂/TOE)



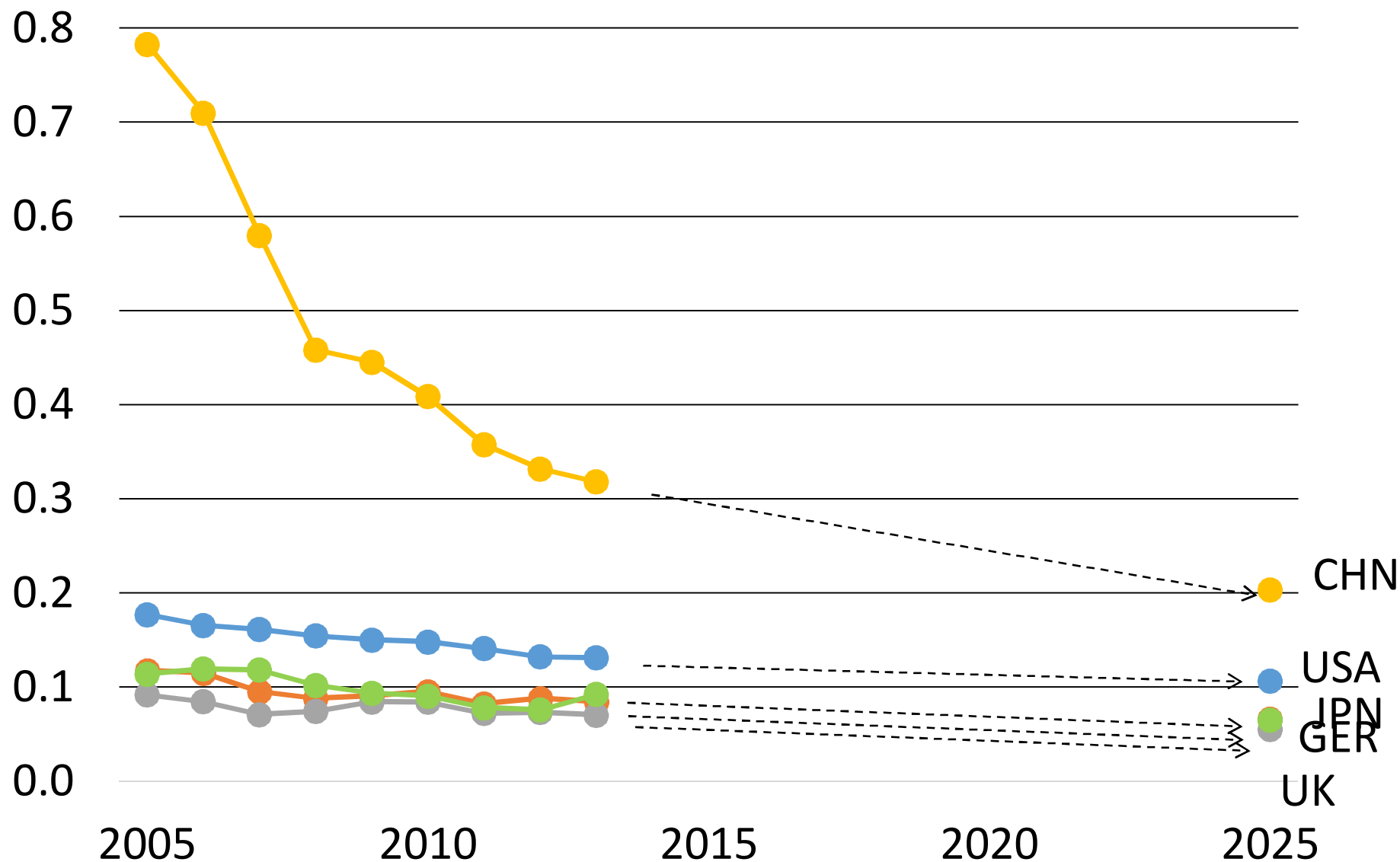
Outcome Indicator 2. Share of renewable energy

(%)



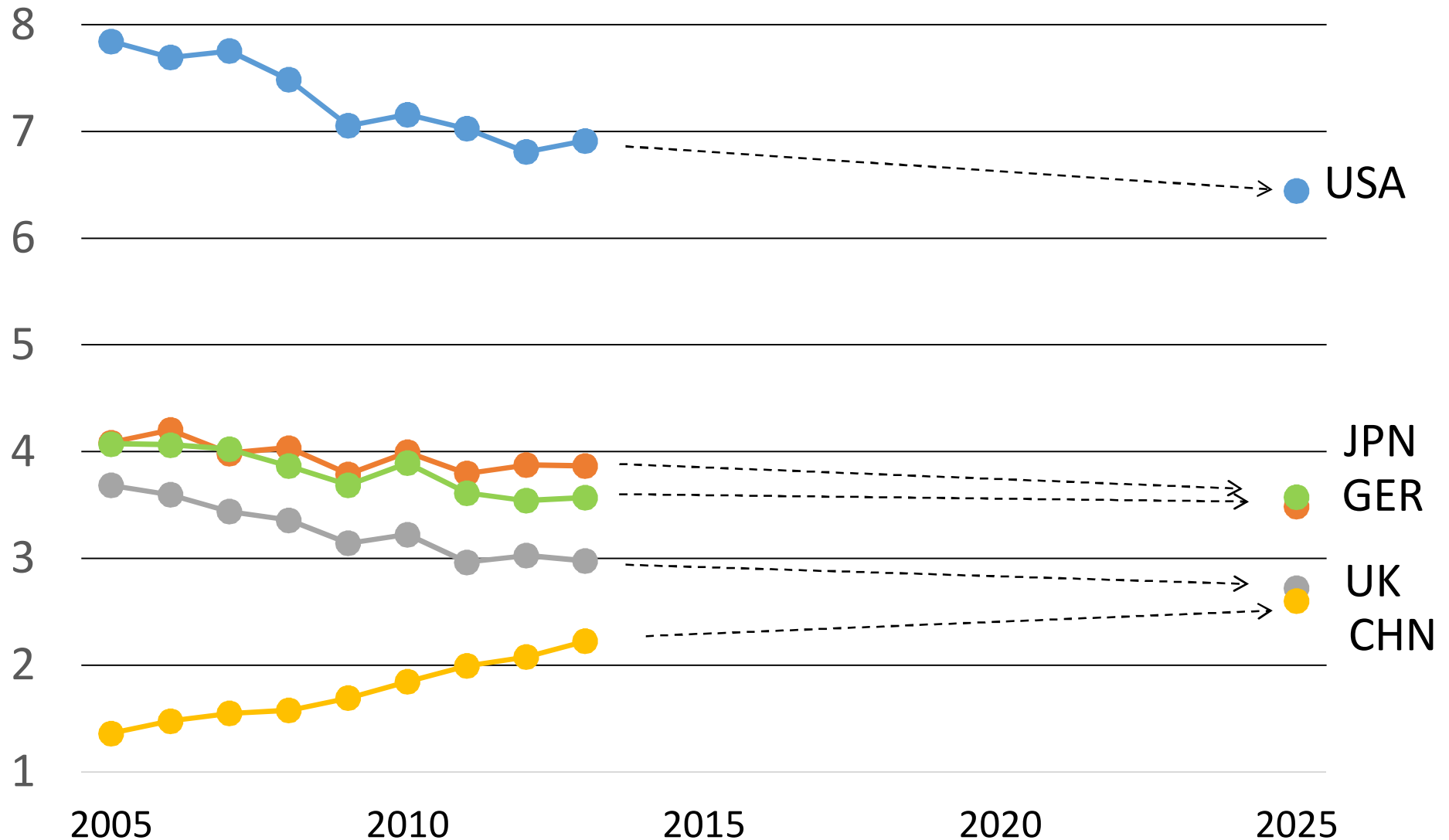
Outcome Indicator 3 Energy consumption/GDP

TOE/1000 USD



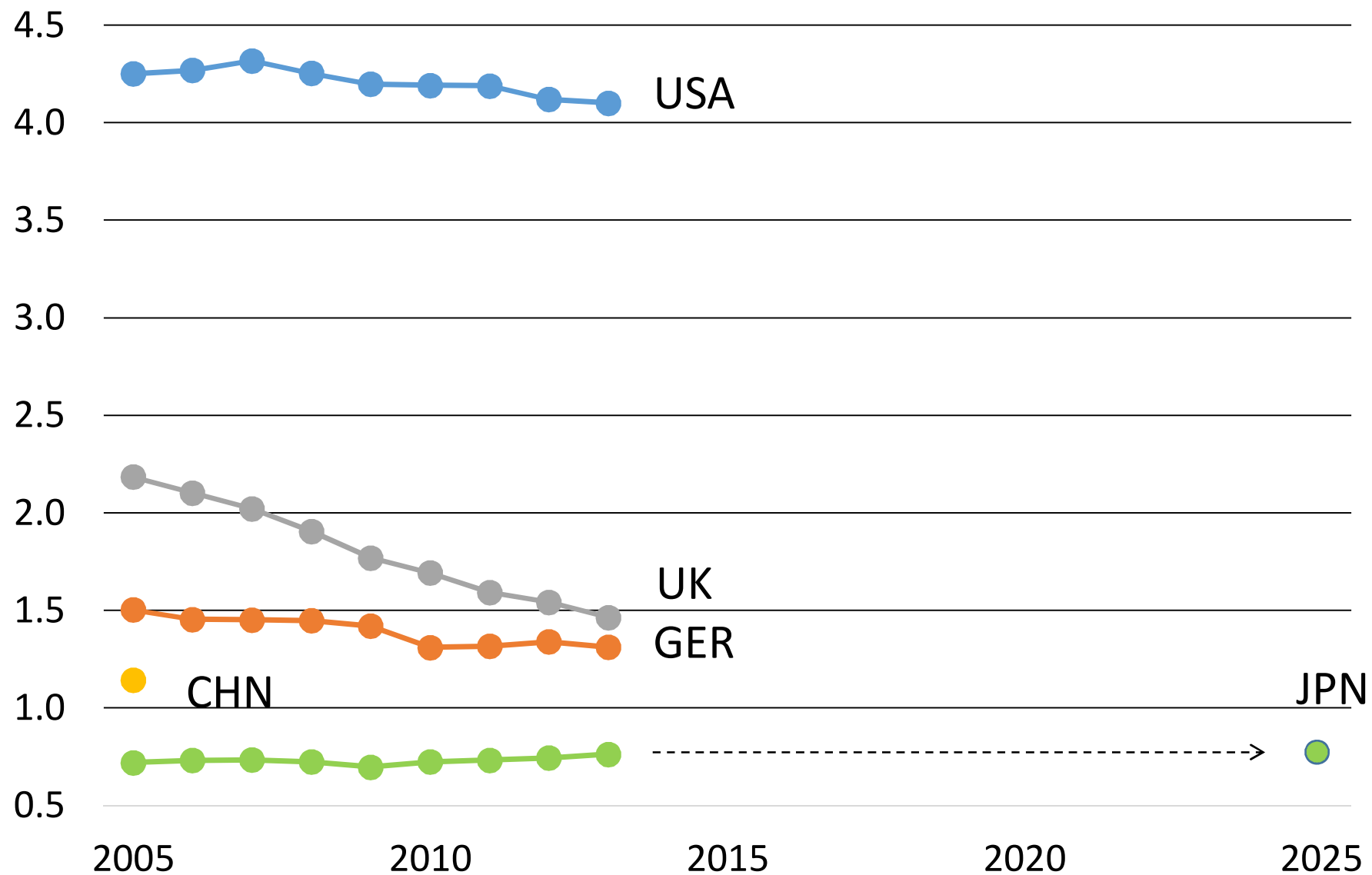
Outcome Indicator 4 Energy consumption/capita

TOE / capita

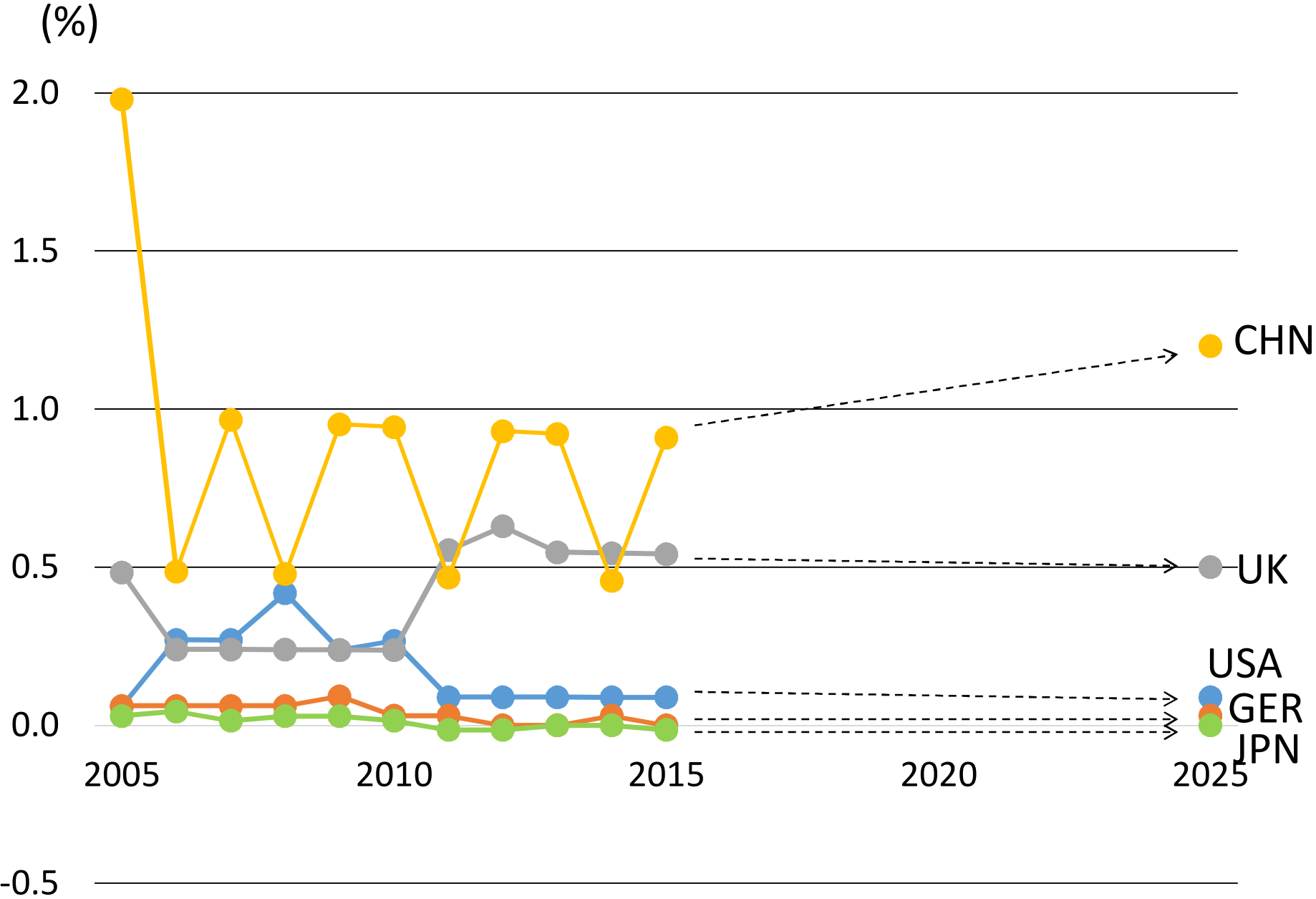


Outcome Indicator 5: Non-CO₂ gases / capita

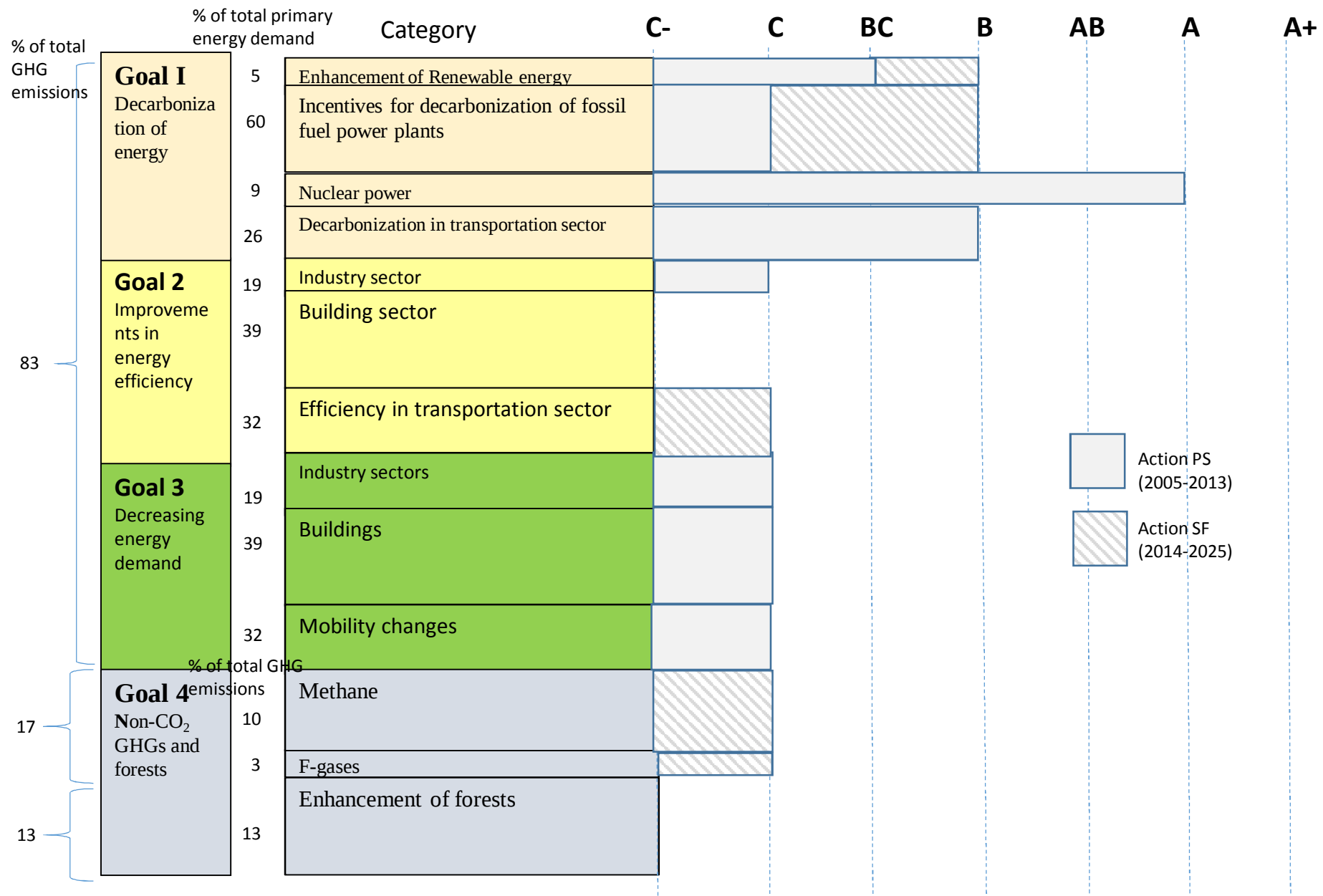
(t CO₂eq)



Outcome Indicator 6. Annual changes in forest coverage

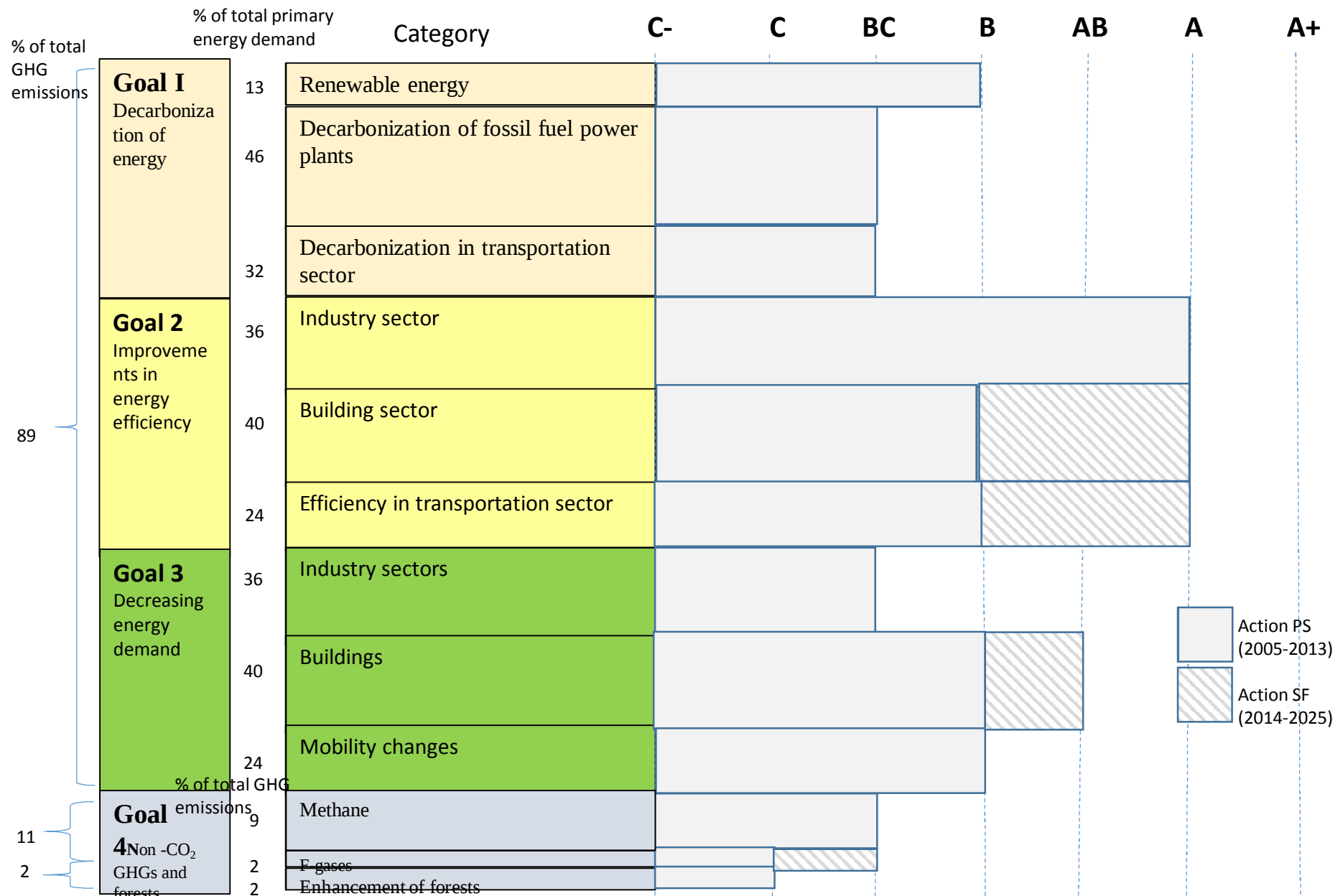


Rating by Action Indicators: USA

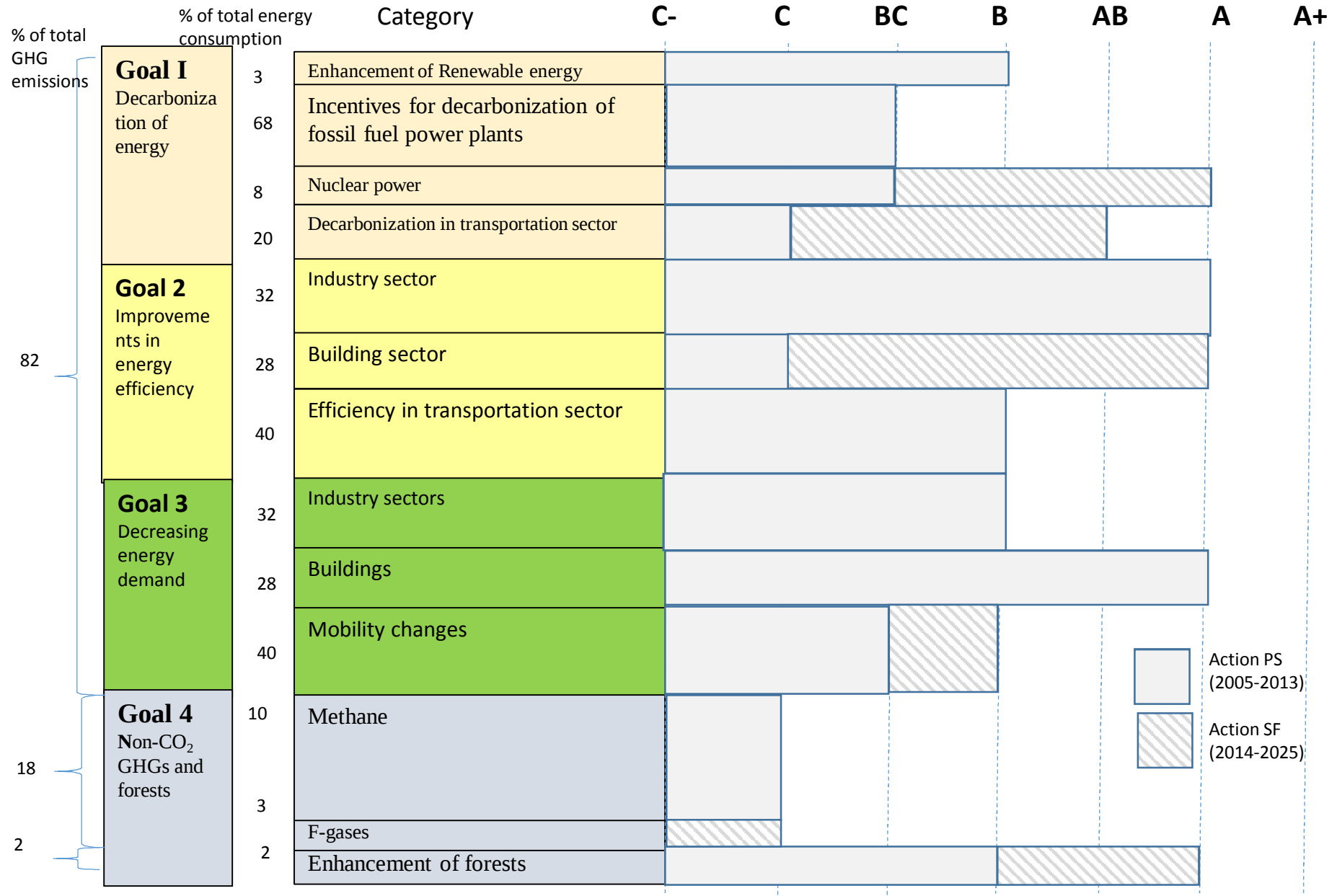


Note: Totals of figures in percentages do not always add up to 100% because not all relevant sectors are covered by Action Indicators.

Rating by Action Indicators: Germany

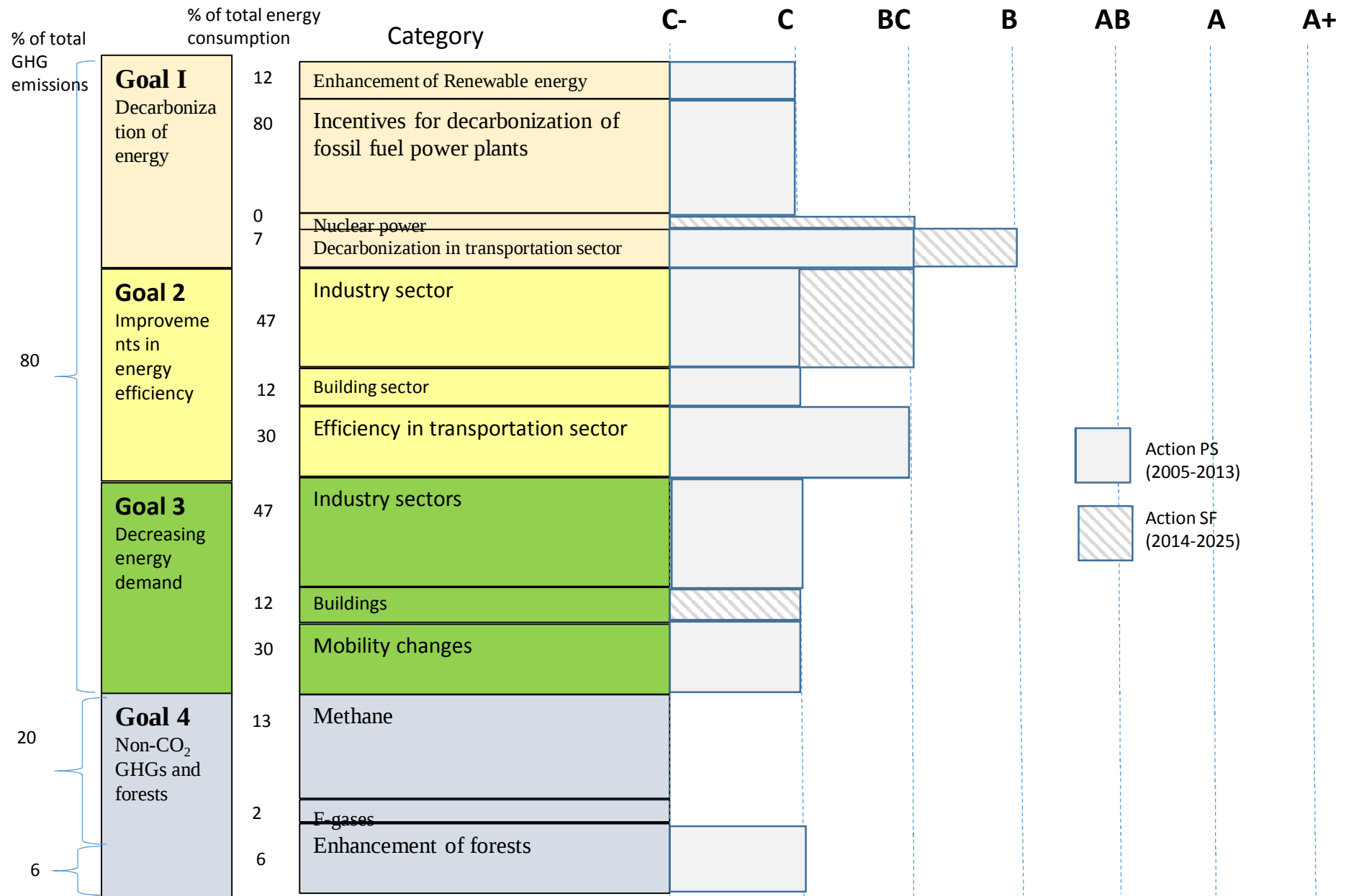


Rating by Action Indicators: United Kingdom

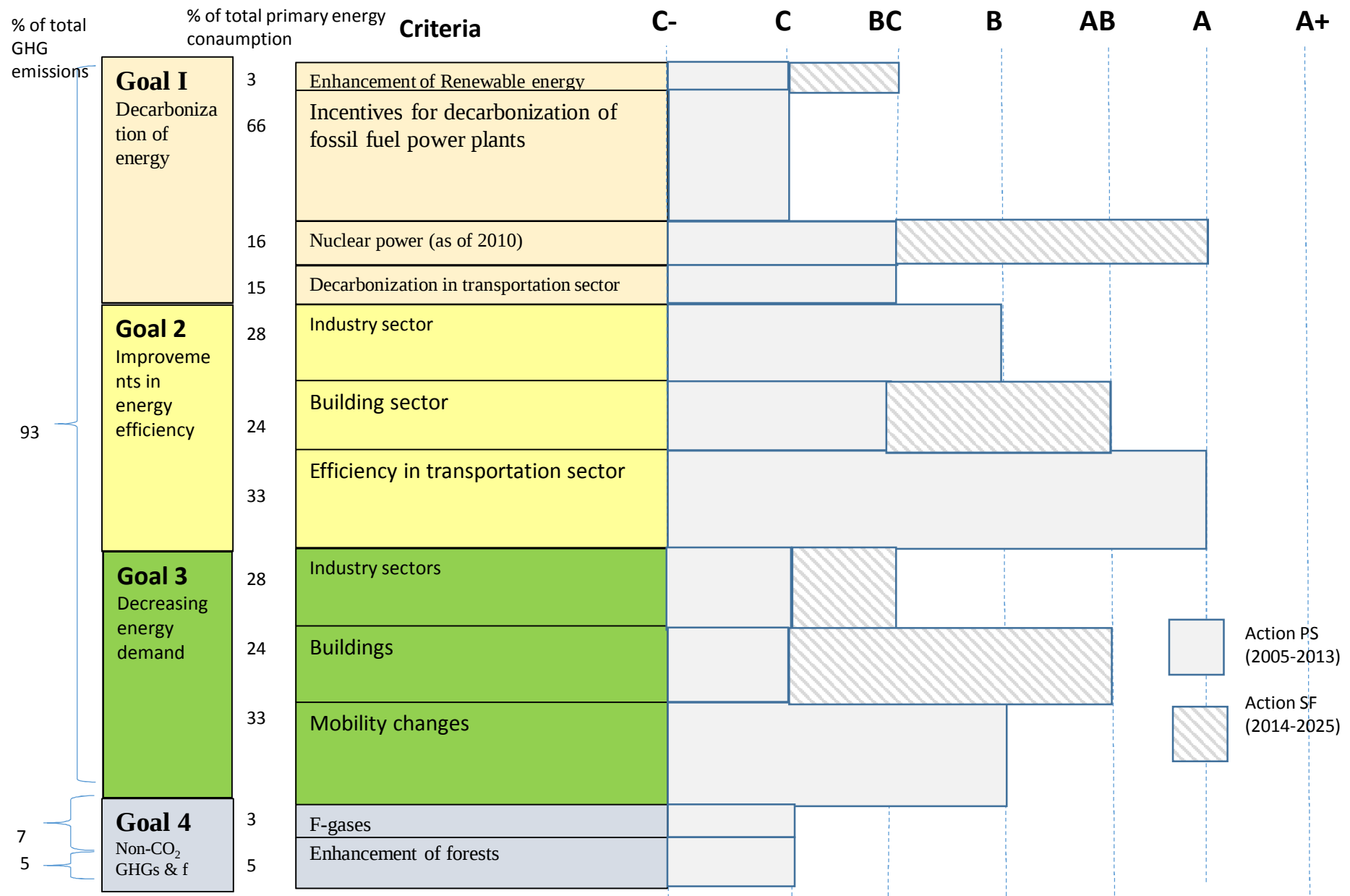


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Rating by Action Indicators: China



Rating by Action Indicators: Japan



Note: Totals of figures in percentages do not always add up to 100% because not all relevant sectors are covered by Action Indicators.

Remarks

Combining of assessments by Outcome Indicators and Action indicators was effective in explaining;

- ✓ reasons behind countries' increase /decrease in GHG emissions,
- ✓ types of goals the country put most efforts in,
- ✓ areas where potentials for further emission reduction exist,
- ✓ effective policies in reducing GHGs,

Remaining issues:

- ✓ Data availability: countries need to have data on population, GDP, energy supply and renewable energy to use C-PPI.
- ✓ Future projections particularly on actions are uncertain.

Our next step:

- ✓ Application of the C-PPI methodology to G20 countries, to find ways to overcome the remaining issues.

Thank you!

For any inquiries, please send emails to ykame@nies.go.jp