Action Indicators (tentative)

The Action Indicators are not intended to rank countries by their GHG emission levels. Rather, they are useful to verify those policies that are already effective in many countries and those that could be strengthened or should be implemented in other countries. By comparing different time periods in a country, we will be able to assess whether the country is making progress in tackling the climate change.

Examples of candidates of policy instruments as Action Indicators

Goal	Category	Candidates for Action Indicators
Goal 1	Promotion of renewable energy	target setting; feed-in tariff; subsidy; policies related to power grids and transmission; policies to increase social acceptance
	Promotion of decarbonization of fossil fuel power plants	CO_2 emission standards for coal power plants at power plant level; CO_2 emission standards for coal power plants at power sector level; phase out of subsidies for fossil fuels
	Nuclear power	safety standards; preparation for emergency
	Incentives	emissions trading
	Transportation sector	subsidies for less carbon intensive means of transportation
Goal 2	Industry sector	target setting for emissions; target setting for efficiency; subsidies to promote efficiency; agreement between government and industry; policies to mobilize investments into energy efficient products and production processes
	Building sector	standards and regulations concerning new buildings and existing buildings; subsidies to promote energy efficient buildings
	Transportation sector	regulations related to energy efficiency of automobiles; subsidies to promote energy efficient cars; policies to promote energy efficiency in other means of transportation
Goal 3	Demand-responses in area of energy and industry sectors	target setting; standards and regulations concerning demand-responses; subsidies to promote demand-responses; agreements between governments and industries
	Demand-side management in building sector	BEMS and HEMS; other energy management systems; standards and regulations to reduce energy demands; visualization and other means to change consumer behavior; carbon tax and energy tax
	Transportation sector	information system to reduce unneeded mobility; promotion to shift to means of transportation from private cars; carbon tax and energy tax
	Regional development	construction of low carbon cities
Others	LULUCF	standards, regulations, and subsidies for conservation of forests; promotion of wise-use of wood products; promotion of minimizing land-use change from forests
	HFCs and other fluorinated gases	regulatory measures to prohibit or reduce consumption of HFCs; regulatory measures to collect and destroy or recycle CFCs and HCFCs in products
	Methane	measures to reduce methane emissions

Outcome Indicators (tentative)

This indicator aims to present the overall situation of a country by comparing it to other countries, and to assess the progress within one country by comparing it across time periods. The outcome of each country is affected by actions or efforts taken by each country, as well as by many other factors that are not related to the efforts. Simple indicators should be chosen so that necessary data can be obtained. Five indicators are tentatively chosen in this study.

Outcome Indicators and the corresponding equity consideration

Goal	Outcome Indicators	Equity consideration
Goal 1	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	3. Total energy consumption/ Gross Domestic Products (GDP)	Developed countries should aim at lower levels than developing countries.
Goal 3	4. Total energy consumption/ population	Developing countries could increase the rate up to a certain level, and then start declining it.
Others	5. Land covered by forests	Geographical and climatic circumstances shall be taken into account.

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Climate change mitigation Policy Progression Indicator (CPPI)

— a tool for measuring progression of climate change mitigation at national levels

Introduction

November 2015

Climate change mitigation Policy Progression Indicator Research Project

http://www-iam.nies.go.jp/climatepolicy/cppi/index.htm

This project is based on a study “2-1501 Development of Indicators to Measure Progression of Climate Change Mitigation Policies,” funded by Environmental Research Fund, Ministry of the Environment, Japan.

Duration of the project: April 2015~March 2018.

Objective

As an outcome of four years of multilateral negotiation under the United Nations Framework Convention on Climate Change (UNFCCC), it is expected that an agreement on the post-2020 framework would be reached at the 21st Conference of the Parties to the UNFCCC (COP21) to be held in Paris, in December 2015.

Although the final outcome is yet to be materialized (as of Nov. 2015), it is likely that countries' commitment or contributions would not be to limit their greenhouse gas (GHG) emissions below the levels announced as Nationally Determined Contributions (NDCs) but rather to implement necessary policies and measures to achieve the NDCs and to periodically report and assess the progress made to reach them. Thus, procedure to examine the efforts made by each country is likely to become increasingly important in the post-2020 climate regime.

As the NDCs are expected to be non-legally binding by nature under the new institution, the reporting and assessment procedure should be considered as a means to promote countries' willingness to take additional actions to make further progress in climate change mitigation policies. The procedure should also be utilized to compare the level of achievement across countries. The procedure should be simple enough so that all countries can follow the process without much technical difficulty or financial capacity.

The aim of this project is, therefore, to develop a set of indicators that would contribute to making effective evaluation of the reporting and assessment procedures in the post-2020 period. The indicators aim at fulfilling two objectives. One is to measure actual efforts taken by countries to reduce GHG emissions. Countries' GHG emissions are affected by various factors irrelevant of policies. On one hand, countries could be praised when their GHG emissions were reduced, no matter what were the reasons of the reduction. On the other hand, countries should be praised or encouraged also by how much effort they put into reducing their GHG emissions, even if the effort did not lead to much reduction in actual emissions. The second objective is to compare the relative status of actual emissions across countries. Countries need to make further effort in climate change mitigation policies even if they were already judged as making significant effort.

Structure of the Climate change mitigation Policy Progression Indicator (CPPI)

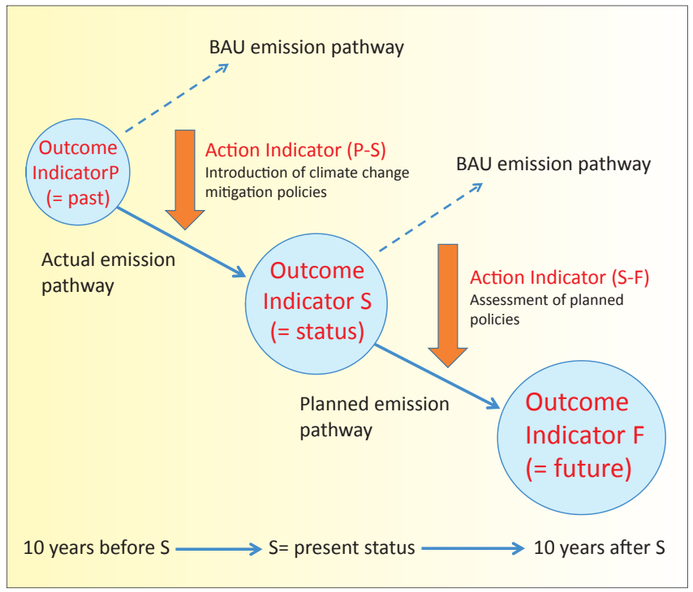
The Climate change mitigation Policy Progression Indicator (CPPI) consists of two pillars.

Action Indicator: The purpose is to measure the countries' effort in reducing GHG emissions by introducing climate change mitigation policies. Countries' GHG emissions are relatively easy to measure, but they are affected by various factors such as economic recessions and warm winters, which are independent of implementation of climate change mitigation policies. Rather, this indicator will measure the level of climate mitigation policies by selecting key policy instruments that could be commonly introduced in all countries.

Outcome Indicator: The purpose is to assess the status of countries in respect to their achievement of actual GHG emission reduction by comparing with other countries as well as by comparing with each country's own past. This indicator shows the actual status of energy use and emissions independent of policy efforts taken by the countries.

The CPPI is to be updated and re-calculated every 5 years; consequently, three timeframes, P (= past), S (= status), and F (= future), will be shifted 5 years for each occasion.

The indicators should be simple and concise to allow their universal application to all countries. The measurement should also take into account the equity dimensions because the level of effort expected to be taken by developed countries should be significantly different from that to be taken by developing countries.



BAU: Business-as-Usual emission trajectory

Common framework for Indicators

Although GHG emissions include gases that are not related to fossil fuel combustion, it goes without saying that fossil fuel combustion is the central target that needs to be tackled in order to mitigate climate change in the long run. The use of energy differs from one country to another, depending on each country's level of economic development, geopolitical circumstances, availability of resources, climate, type of industries in the country, etc. Meanwhile, all countries should aim for three goals if they were to reduce GHG emissions from fossil fuel combustion.

[Goal 1] Decarbonization of energy:

All countries, in one way or another, should reduce consumption of fossil fuel. As an alternative, countries can increase the use of renewable energy, the use of nuclear power, or the use of carbon capture and storage (CCS) technology. While all these options are effective in reducing CO_2 emissions, the latter two face other issues. These options could be considered as intermediary solutions until renewable energy is widely diffused. The use of renewable energy is far more supported by the people than the other two options. However, some voices emphasize economic and technical concerns related to renewable energies. These are the challenges that need to be overcome for a wide diffusion of renewable energy technologies.

[Goal 2] Improvement of energy efficiency

Energy should be used in the most efficient way to achieve the greatest output. Energy efficiency has been improving worldwide, but the speed of improvement should be even faster if we were to minimize the impact of climate change. In some sectors, energy efficiency at the product level is satisfactory, but not at the system or community levels. Hence, various levels of energy efficiency need to be assessed. Some policies to promote energy-efficient products do not always lead to overall emission reduction because they may stimulate increased consumption of products and energy at community level. However, this goal only intends to assess the efficiency aspect of products and systems.

[Goal 3] Minimizing demand for energy service

While energy efficiency needs to be further improved, the best approach is to eliminate any need for energy. For instance, improvement of energy efficiency in automobiles is important, but people can use other means of transportation such as bicycles and public transportation while enjoying the same level of mobility. Energy demand management is another approach to reduce the pressure on insufficient electricity supply, rather than increasing the supply by burning more fossil fuels to meet the requirements. It is becoming more important to reduce unnecessary demand for energy and products to reach the climate mitigation goal.

Both the Action and Outcome indicators are constructed in a way to measure countries' progress mainly in areas of the three goals. Several indicators are further added to reflect other aspects of climate mitigation policies that cannot be covered by the three goals, such as non-CO_2 GHG and land use, land-use change and forestry (LULUCF).