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# A Proposal on the Supplementarity Issue for Emissions Trading and Joint Implementation

The Institute for Global Environmental Strategies (IGES)[†]

Naoki MATSUO

E-mail: ***n_matsuo@iges.or.jp***

## Abstract

Kyoto Protocol incorporates the *international* flexibility mechanisms such as emissions trading, *etc*., in addition to setting the quantified commitments for Annex I Parties. The Protocol also recognizes the importance of *domestic* actions, and supports the concept of *supplementarity* in the Articles 6 and 17.

EU proposes to *limit* the tradeable amounts of emissions to meet this concept. A new idea to *develop common physical performance indicators* is proposed in this paper. This proposal reflects the spirit of the Article 2 of the Protocol and is expected both to promote domestic actions in Annex I Parties and also to develop international cooperative framework.

[†] Kamiyamaguchi 1560-39, Hayama, Kanagawa 240-0198; Phone: (0468) 55-3812, Fax: (0468) 55-3809
The Institute for Global Environmental Strategies (IGES), <Climate Change Project>

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# I. Backgrounds

## I.1 Kyoto Protocol and Supplementarity

The Kyoto Protocol enables the Annex I Parties to meet their legally binding quantified targets through international acquisition of their assigned amounts of emissions in a flexible manner. On the other hand, it notes the concept of supplementarity as follows for these emissions (assigned amounts) transfer schemes within Annex I:

**Article 6.1(d)**: The acquisition of emission reduction units shall be *supplemental* to domestic actions for the purposes of meeting commitments under Article 3.

**Article 17**: Any such trading shall be *supplemental* to domestic actions for the purpose of meeting quantified emission limitation and reduction commitments under that Article (Article 3).

This reflects the concern of relying very much on such international instruments *without domestic efforts*. However, it should be noted that this supplementarity was not be specified in detail in the Protocol with the objection by the US and some others.[1] This issue is important for designing the regime. If we cannot agree with some concrete solution filling the gap among the countries, implementing flexibility instruments cannot but be deferred. Early resolution of this issue is needed in this regard.

This paper proposes an new idea to tackle this supplementarity issue from the aspect of domestic policies/measures respecting the spirit of the Article 2 (Common Actions) of the Protocol, not limiting tradeable amounts.

## I.2 Designing Issue under Tough Kyoto Targets

It is important but often neglected in the design of flexibility mechanisms such as emissions trading that “how the difficulty in meeting Kyoto targets influences the regime design”.

[1] In Kyoto, “limit to the tradeable amounts” shown in section II was negotiated. This quantified ceiling idea could not be agreed.

In reality from the view points of energy economics, Kyoto targets are at very demanding levels to meet domestically judging from the past/current trends and outlook of each OECD country. Moreover, few countries might be able to completely implement effective measures in the near future.

In case that the targets are loosely defined so that many OECD countries will be able to meet them using domestic measures only, designing flexibility mechanisms is not so difficult. Almost all of the Annex I Parties will be able to comply with the Protocol using such mechanisms as buffer. This feature is completely different from other treaties like Montreal Protocol. In the Kyoto Protocol, excess emissions can be cancelled by purchasing emission permits in the market. The problem is whether the market can supply enough emission permits driven by price increase, in other words, whether the market functions properly.[2]

To the contrary, in the condition that the market functions properly, the whole amount of GHGs emissions in Annex I are maintained in the level specified in the Kyoto Protocol. In other words, the market mechanism may have strong confinement effect in the functioning emissions trading regime.[3]

In case that the market cannot function properly, a country cannot purchase the permits in order to comply with the Protocol. In this situation, most OECD countries might not be able to comply with the Protocol judging from the current emissions trends. This may destroy the confidence and working relations between developed and developing countries and may end up to the collapse of the established framework of UNFCCC and Kyoto Protocol.

A balanced and more stringent approach is probably needed: domestic mitigation efforts, as well as international flexibility mechanisms. Limiting one of them may lower the possibility to comply with the Protocol and magnify the possibility for the collapse of the framework of the Protocol. At least until the market functions properly, we should promote mitigation measures both from domestic side and international side.

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[2] The condition that the market functions properly is often assumed with no doubt. The author's concern is the applicability of this assumption (especially, in the early stage of the market like the first commitment period).

[3] Of course, climate change is the function of the whole amount of emissions only. In this regard, the concept of supplementarity is *ethical*, not of environmental load. On the other hand, another view is possible as described earlier that both of the domestic and international measures are needed fully to meet the Annex I target in the Kyoto Protocol.

# II. Problems to Limit Tradeable Amounts

## II.1 Options Discussed at the EU Council

EU has claimed the necessity of the supplementarity concept and the ceiling on tradeable amounts as the mean to realize it. EU Council for Environmental Ministers prior to COP 4 discussed a paper with options for the ceiling idea. According to the paper, three options such as

- Ceiling is defined as 50% of the emission reductions;
- Using quantitative and/or qualitative criteria involving early domestic actions;
- Ceiling is defined as a percentage of emissions in 1990 or 1995,

are presented. Finally, EU supports quantitative and/or qualitative limitations to use the flexibility mechanisms, although adopted no concrete figure for the ceiling.

Germany—supported by Austria and Denmark—proposed the first option of 50% ceiling "from the 1990 level" to the target level, on the other hand, Spain proposed the 50% ceiling "from the business-as-usual (BaU) path".[4]

## II.2 Problems

Potential problems for limiting tradeable amounts artificially are summarized below:

1. Limiting the confinement effect of the emissions trading within the quantified target for Annex I as a whole may link to the risk for occurrence of non-compliant Parties by impeding market mechanism;
2. Negative effects for efficient GHGs abatement[5] due to the distortion to the market mechanism such as illiquidness and growing abatement cost;
3. Inconsistency probability with the GATT/WTO Rule;
4. Technical difficulty for designing limitation for private sector trading in the end of commitment period.

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[4] Naïvely speaking, tradeable amounts in the German proposal is 10.5% of assigned amounts for Germany, 3.5% for US, 0% for New Zealand and unclear for Australian case. In the Spanish proposal, (30%+7%)/2 = 18.5% can be tradeable for the US if we assume that the BaU emissions will be 30% over the 1990 levels. However, defining BaU path might have large arbitrariness.

[5] Efficiency is the most fundamental principle for GHGs abatement in the UNFCCC as well as the equity.

It is difficult for regime design to solve all of these problems. If it may possible, it might take long time to settle it. Therefore, we are going to consider and propose an alternative solution to this supplementarity issue from another aspect in the following section.

# III. Proposal for Performance Indicators

## III.1 Spirits of Kyoto Protocol and Domestic Actions

Originally, "supplementarity" intends Annex I country to implement domestic efforts sufficiently. For the domestic actions, in the Article 2 (Common Actions) of the Kyoto Protocol describes:

> **Article 2. 1 (b)**: *Cooperate* with other such Parties to enhance the individual and combined effectiveness of their policies and measures adopted under this Article, pursuant to Article 4, paragraph 2(e)(i), of the Convention. To this end, these Parties shall *take steps to share their experience and exchange information* on such policies and measures, *including developing ways of improving their comparability, transparency and effectiveness*. The Conference of Parties serving as the meeting of the Parties to this Protocol shall, at its first session or as soon as practicable thereafter, consider ways to facilitate such cooperation, taking into account all relevant information.

This paper proposes an idea respecting this spirit and aims for promoting effective selection and implementation of domestic measures. Maximum application of *both* domestic and international measures utilizing market is envisaged.

However, we must note that the mandatory common measures were not be able to be incorporated in the negotiation process of Article 2. 1 (a) from the view point of political sovereignty and efficiency.

## III.2 Proposal for Performance Indicators

In this paper, we propose the following as the solution for supplementarity instead of limiting tradeable emissions amounts:

1. Adopting to develop "common performance indicators" at a COP session.

- These indicators are measurable and physical energy consumption or GHGs emissions intensity. These should be well-defined technically and represent energy efficiency explicitly. Phased development approach from certain and contributing ones is preferable.[6]
- The development should be under cooperation of the countries. It might be realistic for OECD/IEA to organize some task forces of experts.
- Selection of indicators are adopted by COP through the discussion at SBSTA and advice by the experts of the task forces.

2. Each Annex I Party shall communicate to the Secretariat of the UNFCCC annually with its GHGs inventory data. It is also obliged to analyze the results in its National Communication.

   - It is possible to set this responsibility for the Annex I Party to the Protocol only. Each Party may select its important indicators.[7]
   - Each Party can be well acquainted with its key energy efficiencies by sector and/or by usage through the comparison with other countries and chronological trends.

3. The Secretariat of the UNFCCC shall compile the data communicated by each Party and publish the data as *comparable* tables as in the case of GHGs inventories.

   - Yardstick-type competition can be expected by this comparison.[8]
   - The method to set some standards for each indicator and review the achievement level is possible. However, it might be realistic to start with voluntary efforts of each country.[9]

4. For Transition Parties, a supporting system shall be organized by Annex II Parties. This system also supports developing country Parties voluntarily

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[6] The intensities based on GDP or IIP (index of industrial production) can be considered. These intensities are useful to analyze the domestic development chronologically. However, we must be careful to use them for international comparison of their absolute values because of the issues such as exchange rate, different industrial structure and different categories in statistics. In this sense, we propose microscopic physical indicators rather than macroscopic ones. For the policy makers, micro information might be more useful than macro one to design/implement concrete measures.

[7] For example, the thermal efficiency of coal fired power plant is meaningless for the Party with hydro only.

[8] Yardstick-type competition is the indirect competition through the apparent comparison of performance.

[9] It is possible to agree with some stronger procedures like recommendation corresponding to the level based on some standards in the future. In this case also, each Party can select its own way to improve its performance.

participating this programme.

- Capacity building is important for this supporting activities.

5. Coverage of indicators shall be broaden through the regular review/revision.

This proposal well reflects the spirit of National Communications. It aims at getting opportunities for more accurate information, which enables policy-makers to promote developing concrete domestic policies and measures.

## III.3 Examples of Indicators

Several categories of performance indicators like physical energy consumption efficiency are listed. Followings are examples of the indicators:

- Energy Transformation Sector

  Mean power plant thermal efficiency (by type; net); Transmission loss; Introduction ratio of cogeneration/renewables; Electricity consumption per capita; …

- Industrial Sector

  Energy consumption intensities per physical outputs by principal industry by principal process (*e.g.*, crude steel production intensity); …

- Household Sector

  Energy consumption per household/capita; Efficiency of principal home appliances; Thermal insulation by warming degree day; …

- Commercial Sector

  Energy consumption per floor space by category; Efficiency of principal commercial appliances; …

- Transportation Sector

  Energy consumption intensity per passenger-kilometer/ton-kilometer by category; Mean fuel efficiency for new cars; Transportation energy use per capita; …

Other indicators including financial aspects can be considered:

– Public Sector

R&D expenditure for energy-saving/renewables as the ratio of general governmental expenditure; energy tax by fuel; …

Of course, some of them are already established as global standards. Some of them are difficult to agree on the common basis for standard (politically). Moreover, technical difficulties for some cases as mixed fuel thermal power plant efficiency and statistical lack of information are seen.

However, each industry may be beneficial in the long term if it agrees to develop such indicators (and standards) in case of low technical barriers.

# IV. Concluding Remarks

The idea to develop common performance indicators proposed in this paper is useful and should be promoted not only for the solution to “supplementarity” concept but also for the opportunity to prepare the lacking world-wide comparable information of energy consumption pattern and energy saving potential. This matches the spirit of Article 2 of the Protocol as well.

Especially for EU emphasizing common policies and measures, this idea might be acceptable because it well reflects the spirit of common actions.

This idea can clarify the countries which have been implementing energy-saving measures. In this regard, this idea might soften the unfair feeling generated by setting the quantified targets by negotiations.

To the contrary, countries with less energy-saving efforts might be pressured indirectly to promote energy efficiency. In this case, they can obtain useful political information to specify the fields for effective implementation.

We must stress again that the Kyoto target for Annex I as a whole is very ambitious. In order to meet it, all of the Annex I Parties must do their sincere efforts both domestically and also internationally especially in the initial stage of emissions trading.

Once this idea is recognized as useful and is adopted at the COP(/MOP), the following steps are: (1) initiating developing programme of common indicators, (2) research and communication by each government and (3) compilation by the UNFCCC Secretariat. This information might supply information basis to tackle the climate change in the

future together with the Annex I GHGs abatement marginal cost information.[10]

We hope that this idea will be on the table in discussion of the UNFCCC/Kyoto Protocol negotiation process.

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[10] Needless to say, this cost information is provided by the market price of the tradeable permit in principle.