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Dōmo arigatō Kyoto:

Four key lessons from the Kyoto Protocol for a new agreement in Paris 2015

The results from the first commitment period of the Kyoto Protocol (KP) show that developed countries fulfilled their commitments through varied strategies. However, the Kyoto protocol did not manage to stabilize global GHG concentrations; furthermore its direct impact on domestic emissions reductions is unclear. Nevertheless, the KP has likely paved the way for a low-carbon transition by establishing international standards on emissions monitoring and on emission reductions projects. Yet, domestic policies – especially the EU ETS – are the main driver of emissions reductions and the principal catalyzers of private finance flows. A new, more effective, agreement would therefore need to expand its coverage, and take down the specter of "internationally binding" emission reductions commitments in order to focus on MRV requirements. Similar to Kyoto, a Paris outcome could take the form of a framework agreement setting up requirements and mechanisms with subsequent implementing agreements expected by 2020.

Background: the Kyoto Protocol, the first international agreement with quantified GHG mitigation targets

In 1992, the United Nations Framework Convention on Climate Change (UNFCCC) was signed in Rio de Janeiro. At that time, the commitments on climate change mitigation focused on developed countries; which led to the signing of the Kyoto Protocol (KP) in 1997. The detailed rules for the mechanisms created in Kyoto were designed between 1997 and 2001, and adopted in 2001 in Marrakesh.

Developed countries listed in the KP's Annex B committed to reduce their greenhouse gases (GHG) emissions by at least 5% between the first commitment period (CP1) – 2008-2012 – and the reference year 1990. The aggregate commitment was broken down for each developed country based on individual national targets; these commitments were enounced in emission allowances (AAUs) distributed to each country. All signatories included in Annex B eventually ratified the KP, with the notable exception of the USA. Canada ratified the KP, but withdrew in 2011.

To comply with their KP commitment, Annex B countries are allowed to use "flexibility mechanisms" which include: the international trading of emission allowances (AAUs) between them, the issuance of project-based emission reduction units (CERs and ERUs) eligible for compliance; and the possibility for a group of countries to aggregate their individual target in a "bubble" to jointly fulfill their commitments. Participating countries are expected to comply – i.e. to provide the necessary quantity of AAUs or other accepted flexibility units – by mid-2015.

In April 2014, the UNFCCC released the 2012 emission inventories of developed countries and therefore enabled a first ex-post analysis of the Kyoto Protocol. This analysis provides some useful lessons to craft the future new global agreement – under the Durban Platform – expected at COP21 in Paris in late 2015 (See e.g. Morel and Shishlov, 2014).

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Analysis: countries fulfilled their commitments but the KP did not reach all of its objectives

When countries commit internationally, they generally take it seriously

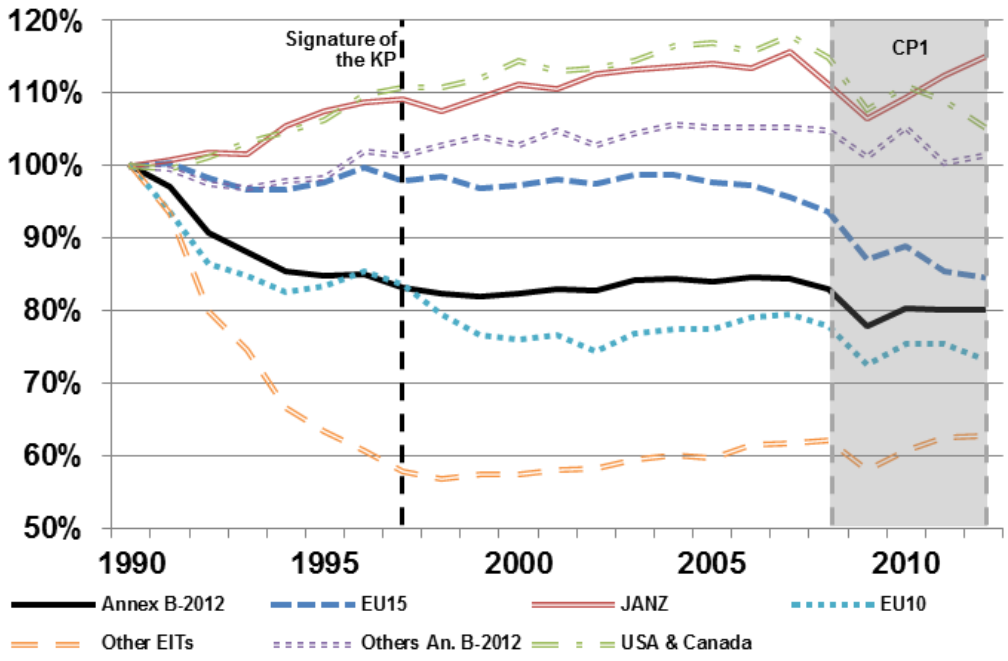
Observation 1. Disparities among developed countries do exist in achieving domestic emission reductions

Only western and eastern EU countries both complied with their KP commitment and decreased their emissions – irrespective of the inclusion of Land Use, Land-Use Change and Forestry (LULUCF) – between the signature of the KP (1997) and 2012. These countries also globally fulfilled their commitments under the KP. Non-E.U. economies in transitions – mainly Russia and Ukraine – also complied, but underwent a significant decrease in emissions before 1997 - linked with the decline of the USSR – and subsequently increased their emissions between 1997 and 2012 (Figure 1).

Other Annex B-2012 countries such as Japan, Australia and New Zealand increased their non-LULUCF emissions. They will nevertheless fulfill their emission targets when taking into account LULUCF and, for Japan, the purchase of offset credits.

Among countries that signed the KP but are not considered as parties of it today, the USA's emissions peaked in 2007, returning to 1994 levels in 2012 – a decline of 11% between 2007 and 2012.[1] The Canadian curve of GHG emissions is less extreme, but also shows a GHG emissions peak in 2007.

Figure 1 – Evolution of emissions excluding LULUCF in developed countries (base 100 = 1990)



Note: Annex B-2012 = original KP's annex B excluding the USA and Canada; EU15 = Western European EU countries; EU10 = Eastern European EU countries; JANZ= Japan, Australia and New Zealand; others EITs= Croatia, Russia and Ukraine; Others An. B -2012 = Iceland, Liechtenstein, Monaco, Norway and Switzerland.

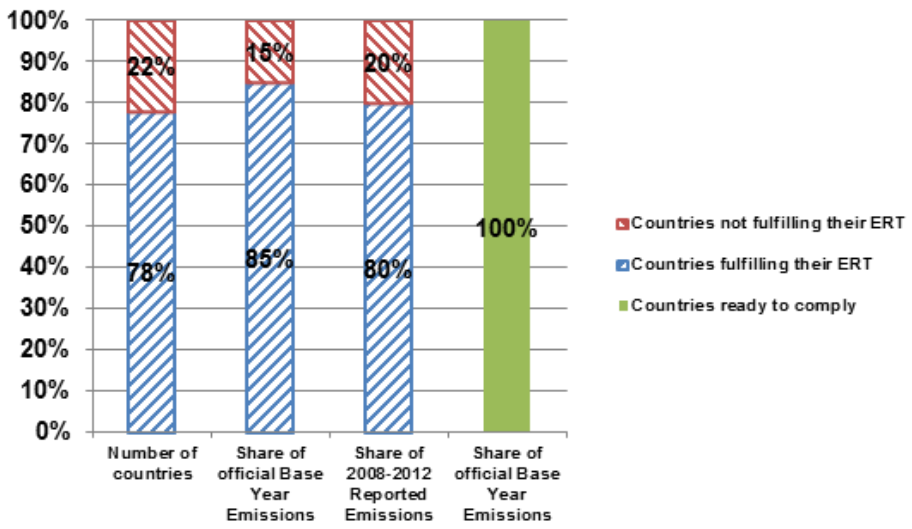
Source: CDC Climat based on UNFCCC and national inventories.

[1] The peak date is 2000 taking into account LULUCF.

Observation 2. All participating countries will comply, although some will rely on flexibility mechanisms to do so

Globally, countries that participated in the KP's first commitment period (CP1) decreased their emissions by 24% thereby surpassing their commitments. Economies in transition (EITs) - especially former-USSR States – experienced deep changes in their economies between 1990 and the period 2008-2012, which resulted in larger reductions in their GHG emissions. This phenomenon – known as "hot air" – is the main explanation behind the substantial overachievement of Kyoto objectives. Nevertheless, other Annex B countries also collectively reached their objective by decreasing their emissions by 9%.

Figure 2 – Distribution of countries according to their compliance and the achievement of their emissions reductions targets (ERT)



Source: CDC Climat based on UNFCCC and national inventories.

While the objectives were reached overall, eight among the thirty-six countries fully participating in the CP1 emitted higher levels of GHGs than their initial commitments. To comply with the KP, these countries implemented the necessary policies to comply, principally through the use of flexibility mechanisms (Figure 2).

Annex I countries also complied with their monitoring, reporting and verification (MRV) requirements under the KP: they successfully set up and maintained a national system which is annually assessed by UNFCCC accredited reviewers.

The Kyoto Protocol improved transparency on emissions, but its impact on emissions reductions is limited

Observation 3. The KP provided useful guidance and improved the MRV of emissions both at country and project levels

Under the KP, and more broadly the UNFCCC, developed countries have the obligation to provide information and report on their emissions, their use of mechanisms and implemented climate policies.

Commonly-agreed reporting procedures have been decided and implemented. These Monitoring, Reporting and Verification (MRV) processes enabled to provide reliable and comparable information. The MRV process at the country level experienced a continued learning-by-doing improvement process.

Joint implementation (JI) and especially the Clean Development Mechanisms (CDM) permitted the emergence of consensus around decisive issues related to accounting emission reductions such as additionality or baselines.

Observation 4. The Kyoto Protocol did not stabilize global GHG concentrations and its impact on domestic policies is uncertain

At the end of the first commitment period, the KP capped GHG emissions of only 36 countries, thus accounting for 24% of 2010 global GHG emissions. While emissions decreased in developed countries, GHG emissions grew globally by 30% between 1990 and 2010. As such, GHG concentrations continued to rise and crossed the symbolic 400 ppm threshold for a whole month in April 2014 despite the ultimate stablization objective of the UNFCCC.

Coherent with their KP commitments, countries implemented domestic policies. Some were dedicated to reduce emissions domestically, while others focused on using flexibility mechanisms by either purchasing or selling carbon units.

The European Union was the principal group of countries that implemented significant national climate policies, thus seeing its emissions decrease. The EU ETS was one of the principal tools used. While focused regionally, the EU ETS is linked with Kyoto tools such as the project-based mechanisms or the trade of AAUs. Furthermore, the EU ETS was one of the principal drivers of carbon unit flows (see Figure 3). Nevertheless, causality between the KP and the implementation of the EU ETS is uncertain: the EU ETS was approved in 2003 when the KP's enter into force was still uncertain.

Private climate finance was fueled by domestic policies, but catalyzed by the international standards under the KP

Observation 5. The KP involved the private sector in clean projects through CDM and JI

When the KP was designed in 1997 and its technical rules detailed in Marrakesh in 2001, the KP was government-centered and negotiations did not focus on the private sector's role. The scale of involvement of the private sector in project-based mechanisms was thus unexpected.

A new sector around the "low-carbon economy" has come of age. Auditors, project developers, consultants, financial intermediaries, carbon unit traders and other private sector actors are deeply involved in emission reduction projects. This can be closely linked with what initially was established for principally public-sector initiatives and created by the KP: the Clean Development Mechanism (CDM) and Joint Implementation (JI).

Today, the CDM and JI represent significantly higher levels of investments than the trading of AAUs. However, in practice today, "climate finance flows" are dominated by other instruments,[2] even if it can be argued that KP flexibility projects follow a more-strict definition of "climate finance."

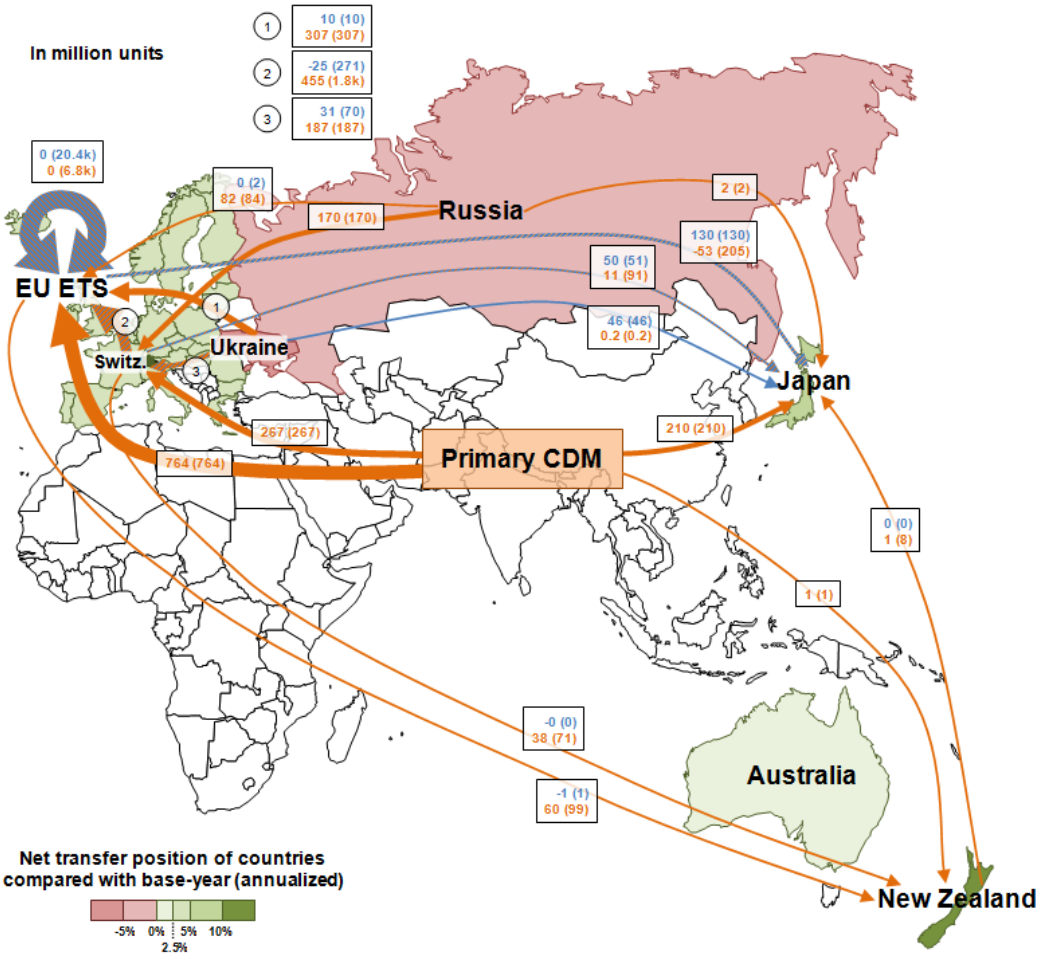
Observation 6. Europe and the EU ETS are the principal sources of demand stimulating climate finance flows

While the KP provided the tools, the resulting use and demand has stemmed principally from domestic policies. Figure 3 demonstrates how the EU ETS has created the main demand for carbon credits (CERs/ERUs) issued from project-based mechanisms. Indeed, the creation of the EU ETS has led to the largest source of demand for CERs/ERUs. As the demand from national governments was limited, it appears that the true demand for CERs/ERUs has come from private actors.

[2] See Climate Finance Landscape (2013), CPI. http://climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2013/

This demand is thus behind the hundreds billion dollars invested in CDM projects. The KP alone would not have been sufficient to catalyze such an amount of private finance even if it paved the way by creating the respective mechanisms.

Figure 3 – Global carbon unit trades as of 31 December 2013: Europe and Japan are the main sources of demand



Note : Flows of AAUs are in blue. Flows of CERs/ERUs are in orange. Figures in parentheses represent trading volumes. Figures outside parentheses represent the net transfers. See Morel and Shishlov (2014) for further details.

Source: Morel and Shishlov (2014) based on UNFCCC, national inventories and national registries data.

A two-step adoption process to define mechanisms' rules

Observation 7. The Kyoto Protocol is a constantly evolving "framework" agreement

The Protocol signed in 1997 only defines requirements for countries and the creation of the flexibility mechanisms. The use of these tools was detailed in 2001 with the Marrakesh Accords. For instance, rules structuring the emissions allowances trading, limits and necessary national actions were detailed in 2001. The same goes for the *modalities and procedures* which operationalized the CDM and JI. Moreover, the Protocol followed a "learning-by-doing" logic, whereby rules and procedures evolved based on newly available research and criticism, as highlighted by the CDM Policy Dialogue.

Therefore, the 1997 Protocol can be seen as a framework agreement, setting up political commitments, defining the key rules and instruments, with elaboration of the operational details occurring over subsequent years.

Observation 8. Some of the tools, however, were little used

Much time was dedicated to the development and implementation of different tools and mechanisms. However, some were not widely used – or at least not at the level to justify such attention.

For example, the trade of AAUs between countries was very limited. As seen in Figure 3, the EU ETS artificially increased the volumes of AAU trade, as each cross-border transaction of an EU allowance had to be backed by a simultaneous transfer of an AAU. However, trades between countries unrelated to the EU ETS represent only 250 million units, of which more than 200 million were purchased solely by Japan. The large amount of "hot air" – which greatly impaired the credibility of AAU trade largely – may explain its unattractiveness among countries. While little used, this mechanism required a dedicated negotiation processes and was at the origin of long discussions around seller/buyer responsibilities that led to the establishment of the commitment period reserve.[3]

Similarly, CERs from LULUCF activities necessitated special units known as t-CERs and l-CERs following dedicated rules. T-CERs have rarely made their way to Annex B registries – a few hundreds thousands units – and l-CERs were not used at all during the CP1.

Observation 9. A "virtual" international legally-binding agreement

Emission reductions were a requirement under the Kyoto Protocol. The "legally binding" characteristic of the KP was often seen as focused solely on emission targets. However, the "legally binding" nature is actually more political than legal. Indeed, non-compliance sanctions are relatively hypothetical[4] and a country can withdraw from the KP without any formal sanction, as seen in the case of Canada in 2011. In practice, "name and shame" has been by far the strongest sanction used, although it can be a powerful one. The willingness to honor its commitments was likely the main driver for Japan not to follow the example of Canada. Moreover, the attractiveness of project-based mechanisms for private investment was based on implemented domestic policies rather than the "legally binding" targets under the KP (Observation 6).

Furthermore, the legally-binding nature of emission reductions commitments was one of the causes of the US non-participation – along with the non-inclusion of other major economies. It can potentially also explain the low participation in the second commitment period: countries which have voluntary targets for 2020 have chosen not to take part in the CP2 – namely Russia, Japan and New-Zealand.

Four lessons for a new agreement

Expanding the coverage: striking a balance between overall environmental integrity and flexibility for specific circumstances
Observations 4 and 8

As seen above, the GHG emissions coverage of the KP was limited and insufficient to tackle the rise of GHG concentrations. Therefore, to be in line with the international 2°C target, any new agreement should aim at extending its coverage both in terms of countries and sectors.

Specific national or sectoral contexts may jeopardize the participation of concerned countries or sectors in the agreement. Under the KP, specific decisions adapted to national or sectoral contexts were implemented: e.g. decision 14/CP.7 for small countries and specific accounting rules for Land Use, Land Use Change and Forestry (LULUCF, article 3.3, 3.4 and 3.7). These

[3] "In order to address the concern that Parties could "oversell" units, and subsequently be unable to meet their own emissions targets, each Party is required to maintain a reserve of ERUs, CERs, AAUs and/or RMUs in its national registry known as the "commitment period reserve"." (http://www.unfccc.int)

[4] The Marrakesh accords specified a suspension of being able to trade units and less AAU distributed in the second commitment period (CP2) but the requested amendments were never adopted under the KP.

specific rules had a limited impact on the global environmental integrity of the Protocol and acted as a redistributive policy: applying to LULUCF the same accounting rules as in other sectors can be disadvantageous to some countries but globally results in more emissions reductions.

On the other hand, the "hot air" that may be also seen as a "specific rule" significantly degraded the global balance of the Protocol. As such, it strongly impaired the environmental integrity, and therefore the credibility, of the Protocol.

Thus, a limited number of exceptions or specific accounting rules – representing a small impact on global emissions – to introduce flexibility can help overcome blocking points and ensure a wider coverage for the 2015 agreement. Insofar as they do not hamper the global environmental integrity of the agreement, these specific rules may be a reasonable tradeoff. The impact of "hot air" cancellation on the participation of some countries during the CP2 is a reminder of how a balance between better emission coverage and environmental integrity may be difficult to strike.

Removing the virtual specter of internationally legally binding commitments and limiting the focus on methods of compliance
Observations 2, 8 and 9

The KP is presented as a binding agreement on GHG emissions. However, its binding nature is rather limited in practice – as proven by Canada – and may have led to decreasing the GHG coverage of the agreement.

Extensive negotiations and resources were dedicated to demarcating the boundaries of compliance and tools. However, in the end, part of the rules and mechanisms implemented were not fully exploited by countries. This is partly due to the low need to use flexibility mechanisms (i.e. lack of a stringent emissions cap), but also the perceived mistrust around them.

Dedicating significant negotiation resources and time, as has seen historically, on emissions reduction commitments and their legally binding nature may thus not be the most efficient approach.

Focusing on MRV processes
Observations 1, 3 and 6

Information – and reporting – is a key part of ensuring countries' participation and compliance with commitments. It is also a necessary means to build trust among countries as their strategies, domestic policies and tools they implement may differ.

Under the KP, and more broadly the UNFCCC, developed countries have the obligation to provide information and report on their emissions, their use of mechanisms, the climate policies they implement and the flows of climate finance they provide.

Commonly agreed reporting procedures have been decided and implemented. These Monitoring, Reporting and Verification (MRV) processes enabled the provision of reliable and comparable information.

Therefore, a new agreement could prioritize legally binding MRV requirements over the legal form of commitments to reduce emissions. Improving the existing MRV requirements and extending them to more countries or policy areas would be a useful way to build upon one of the key successes of the KP. Decisions taken in Durban and Warsaw, inter alia on tropical deforestation, are steps in that direction.

Providing flexibility in the agreement and its adoption process
Observation 7

The Kyoto Protocol was adopted in two steps, with a framework agreement in 1997 and detailed rules elaborated in the following years. *A priori*, there is no reason that the same approach

should not be used for a new global agreement: the Paris conference in 2015 could deliver a framework agreement setting up requirements and tools; a complementary agreement detailing the operationalization of Paris decisions could then be approved before 2020. This operationalization may concern both setting up mechanisms' detailed rules and the way to internationally take into account various domestic policies.

To find out more…

- Legal texts:
  - *The Kyoto Protocol* (1997) http://unfccc.int/resource/docs/convkp/kpeng.pdf
  - *The Marrakesh accords* (2001) http://unfccc.int/resource/docs/cop7/13a01.pdf and http://unfccc.int/resource/docs/cop7/13a02.pdf
  - *Doha amendments* (2012) http://unfccc.int/resource/docs/2012/cmp8/eng/13a01.pdf

- Detailed ex-post analysis of the Kyoto Protocol:
  - Morel, R. and Shishlov, I. (2014). *Ex-post evaluation of the Kyoto Protocol: Four lessons for the 2015 Paris Agreement* (2014). http://www.cdcclimat.com/Climate-Report-no44-Ex-post.html

- Project-based mechanisms :
  - Shishlov, I., Bellassen, V. and Leguet, B. (2012). *Joint Implementation: a frontier mechanism within the borders of an emissions cap*. Climate Report n°33. http://www.cdcclimat.com/Climate-Report-no33-Joint-Implementation-a-frontier-mechanism-within-the-borders-of-an-emissions-cap.html
  - Shishlov, I. and Bellassen, V. (2012). *10 lessons from 10 years of the CDM*. Climate Report n°37. http://www.cdcclimat.com/Climate-Report-no37-10-lessons-from-10-years-of-the-CDM.html

- Impact of Doha decisions for the CP2:
  - Morel, R. (2013). *How the negotiators tackled the "hot air" issue for the second commitment period of the Kyoto Protocol*. http://www.cdcclimat.com/How-the-negotiators-tackled-the.html

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