#03 – June 2015

ClimasCOPe

Exploring the challenges behind the Paris Agreement #COP21

A newsletter by I4CE Institute for Climate Economics in partnership with ADEME French Environment & Energy Management Agency

PARIS2015 UN Climate Change Conference COP21·CMP11

Heading towards the 21st Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) to be held in Paris from November 30th to December 11th 2015, I4CE, - Institute for Climate Economics, in partnership with ADEME, the French Environment and Energy Management Agency, attempts to shed some light on the challenges surrounding this Paris Climate Conference 2015. We will be exploring what can be expected from the post-2020 climate agreement in Paris. We will also be discussing some keys success indicators of such an agreement. Over the course of six issues, ClimasCOPe will provide analysis related to carbon pricing, Climate Finance, greenhouse gas (GHG) emissions' accounting, the role of subnational actors, adaptation to climate change and the compatibility of government commitments with the scenario wherein global mean temperatures would rise by no more than 2°C.

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Editorial – Three keys to effective GHG emissions monitoring for a broader climate agreement

Each year, the 43 Annex I countries submit an inventory of their greenhouse gas (GHG) emissions. This inventory includes around sixty sheets of calculations and several hundred pages detailing the methods used and sources of the underlying data. These accounts are also audited each year by accredited experts. The UNFCCC Secretariat is responsible for coordinating audits, selecting auditors and developing tools to facilitate analysis of the innumerable columns of figures contained in the inventories.

Monitoring, Reporting and Verification (MRV) of countries' emissions is therefore carried out within the framework of the UN. This system is effective, since for a modest cost – less than €1 million per year per country, or €0.002/tCO_2e on average[1] – it produces recent and reliable emissions data. Undoubtedly the penalties imposed by the Kyoto Protocol have played their part, since the six countries whose inventories were found deficient, quickly made the necessary changes to continue their involvement in Joint Implementation and emissions trading.

The MRV aspect of the Paris agreement can therefore be summed up in a single question: can this success be extended beyond Annex I countries to cover emerging and developing countries? In principle, the chances are good. Unlike emissions reductions, MRV is a "common good", unlikely to lead to a "tragedy of the commons". For a modest individual cost, it provides all participants with consistent and in-depth information. In practice however, things are not so easy. Opponent interest groups and negotiating stances have had time to take root in MRV, as in all old topics in the negotiation. These groups could block the reforms required for the extension of the MRV system to emerging and developing countries. There are three key elements to these reforms: introducing the concept of materiality, securing a budget to cover the whole audit process and developing a new incentive for countries to submit high-quality inventories.

Materiality means allocating resources in proportion to the size of emissions sources and the level of uncertainty. It would be absurd, for instance, to dedicate the same resources to the 19 million tonnes of CO_2e released by Slovenia as to the 6.5 billion released by the United States. Although materiality has made a hesitant appearance in reporting guidelines, it has been removed from those concerning verification. In both cases, nothing can be said yet for post-2020 since the guidelines only cover the period from 2013 to 2020.

The current budget for reviewing inventories does not cover the cost of auditors for Annex I countries, leaving countries to meet this expense. This partial budgetary allowance presents a conundrum in terms of mobilizing auditors. Furthermore, what is the logic behind asking Greece – with GDP of $200 billion – to pay for Greek auditors when those for China – with GDP of $4900 billion – are paid for by the UNFCCC? Granting the Secretariat full management of the budget would also allow stricter requirements in terms of auditors' efficiency and their judicial body, the Lead Reviewers' Meeting.

With the the current abandonment of flexibility mechanisms, countries' only remaining incentive is their reputation for providing high-quality inventories – so-called «naming and shaming». It would be reasonable to reinforce this by making inventory reviews clearer and more conclusive. Other incentives could also be created. One example would be making funding conditional – as adopted by REDD+ in Warsaw in 2013 – on ensuring MRV compliance with IPCC guidelines. Adapting the level of requirements to countries' capacities, in terms of monitoring scope or reporting frequency, would be another.

MRV details for the post-2020 period will not be decided in Paris, where the draft resolution explicitly defers the details – *e.g.* rules on accounting, transparency, etc. – to subsequent conferences. Neither is it a question of reinventing the wheel, but rather of reforming the system so that it remains effective as part of a broader climate agreement. To achieve this, three principles should be adopted in Paris in 2015: materiality, fully autonomous management of the review by the Secretariat and incentives to submit high-quality inventories (including both carrots and sticks).

[1] Bellassen, V., Stephan, N. (Eds.), 2015. Accounting for Carbon: Monitoring, Reporting and Verifying Emissions in the Climate Economy. Cambridge University Press, Cambridge, UK.

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Different reports required for Annex I and non-Annex I countries of the UNFCCC

ANNEX I COUNTRIES		NON-ANNEX I COUNTRIES
Information on their emissions, plans, policies and programs established to reduce emissions. Some sections are mandatory for those who have ratified the Kyoto Protocol.	National Communications: NCs, every 4 years	Information on their mitigation and adaptation plans and other GHG reduction plans.
Updated information on emission reduction plans and information on financial, capacity-building and technological support to be provided to non-Annex I countries.	Biennial Reports: BRs/BURs, every 2 years	Updates to their submitted NCs, reports on the support they need and have received from Annex I countries, and expected national constraints. Least Developed Countries (NDCs) and small island countries can submit at their own discretion.
Detailed national emissions profiles of the country, especially on various sectors of economic activity, and a progress report on emissions reduction achieved. Mandatory only for Annex I countries.	National Inventory: NIRs, annual	

Source : *UNFCCC*

The Challenge – MRV: how to hit the bull's eye when there is no silver bullet?

The environmental integrity and efficiency of carbon pricing mechanisms – be it a cap-and-trade scheme, a carbon tax or an offset project – is ensured through a monitoring, reporting and verification (MRV) process. *Monitoring* stands for the collection of the data, *e.g.* through direct measurement or the use of proxies, necessary for calculating the amount of emissions within a given scope and timeframe. *Reporting* includes the aggregation, recording and communication of this data to the relevant authorities. Finally, *Verification* is aimed at detecting errors and/or fraudulent reporting and is usually conducted by an independent accredited third party. The object of MRV is either GHG emissions or – in the case of carbon offset projects – GHG emissions reductions, i.e. the difference between actual and counter-factual – or baseline – emissions. Irrespective of the nature of a carbon pricing or management mechanism, the regulator inevitably has to address three key issues when designing an MRV system.

First, the monitored values come with an *uncertainty*, i.e. may differ from the real values. This uncertainty stems from systematic errors (bias) and/or random errors. In order to limit uncertainty, the regulator may set a minimum certainty threshold, allow the agent to choose between measuring a value and using a default parameter, or discount the benefits of emissions reductions proportionally to uncertainty. Most existing carbon pricing mechanisms provide only limited (if any) incentives to reduce monitoring uncertainty. Generally, *hard* regulations directly attributing value to carbon, such as carbon taxes or cap-and-trade regulations, have more stringent requirements regarding monitoring uncertainty than *soft* regulations or encouragements to simply disclose emissions, such as company-level carbon footprints.

Second, the MRV process comes at a *cost* that is usually borne by the operators under existing carbon pricing mechanisms. The MRV costs may range from a fraction of a cent per ton of CO_2 for national inventories to one euro and above for small-scale carbon offset projects. These costs are largely determined by the scale effect. More comprehensive schemes covering large numbers of entities tend to have lower MRV costs, which may be done explicitly in order not to impose an unbearable burden on agents whose participation is mandatory. However, even within a single carbon pricing mechanism smaller entities tend to bear over-proportionally high MRV costs. Following the *materiality* principle[1], MRV rules often contain provisions to reduce the amount of resources spent on smaller emissions sources. The effect of these provisions is, however, trumped by the economies of scale that reduce relative MRV costs for larger entities.

Third, MRV rules affect the *comparability* of information within and between carbon pricing mechanisms. In systems with tradable emissions permits, comparability of information between entities is crucial; therefore cap-and-trade and carbon offset schemes provide very precise rules regarding the scope, data aggregation and monitoring methods. Conversely, systems with limited financial stakes such as subnational inventories and company-level footprints, while based on pre-defined accounting principles, offer entities a large degree of flexibility in choosing the relevant information to report.

The experience with the most important carbon pricing and management mechanisms on jurisdictional, entity and project levels demonstrates that there is no "silver bullet" solution for the issues discussed above. Policymakers will have to strike a delicate balance between stringency and costs of MRV depending on their objectives. Moreover, with a growing number of national and sub-national carbon pricing initiatives around the world, the tradeoff between information relevance and comparability of mitigation efforts becomes more and more pressing.

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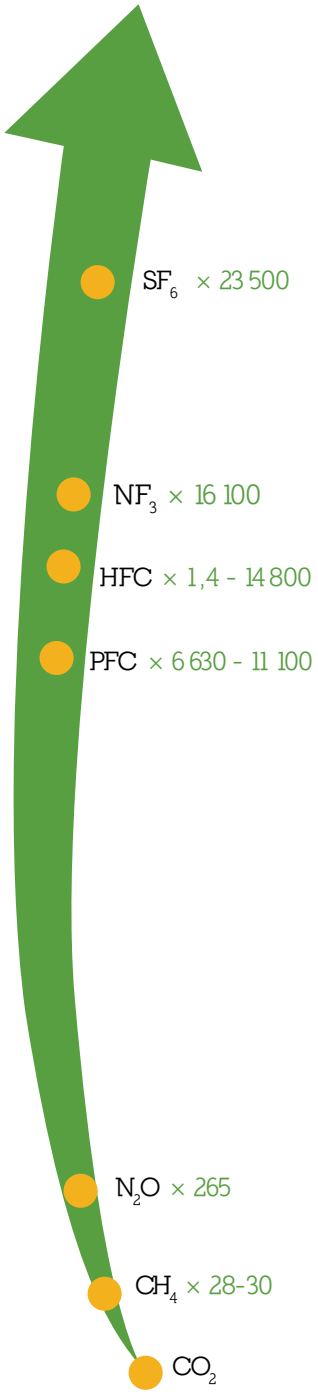
[1] Materiality defines the relevant thresholds of tolerated errors with respect to the level of emissions.

Global warming potential of GHGs (over a 100 year time horizon)



The global warming potential of other GHGs are measured relative to that of CO_2

Source: *IPCC, 1st Working Group 2013*

Find out more

- Bellassen, V., N. Stephan, M. Afriat, E. Alberola, A. Barker, J-P. Chang, C. Chiquet, et al. 2015. Monitoring, Reporting and Verifying Emissions in the Climate Economy. Nature Climate Change 5 (4): 319 – 28.
- Bellassen, V., and N. Stephan. 2015. Accounting for Carbon: Monitoring, Reporting and Verifying Emissions in the Climate Economy. Cambridge, UK: Cambridge University Press. 561 pp.

RECENT DEVELOPMENTS

June Calendar

- June 29th : UN General Assembly high-level meeting on climate change, New York.
- July 20th-21st : Ministerial meeting on climate policy and draft text, convened by the COP21 French Presidency, Paris.
- July 24th : Co-chairs of ADP sessions to present climate draft text.
- August 31st-September 4th : Tenth meeting of the second session of the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP), Bonn.

First Climate Paris week

From May 18th-24th, the first ever Climate Week Paris was held and saw global business and finance leaders come together to discuss preparations for an effective COP 21 and sustainable future. Across 30 events, discussions were held on green investment, carbon pricing, the clean energy transition, financial policy reform, fossil fuel divestment, coordination of public and private sector efforts and the role of business in climate leadership. During the week, the Climate Finance Day discussed the challenge of raising the trillions of dollars in required climate finance while the Business and Climate Summit engaged the business community in ways they can contribute to a low-carbon transition.

Bonn negotiations continue on COP 21 draft text

The Bonn international climate negotiations were held from June 1st-11th, to streamline the COP 21 text to a manageable size and create an effective and robust climate deal. Due to a slow pace of negotiations, the text was eventually only trimmed by four pages. The discussions were marked by lack of resolution in the finance text; developed countries had not sufficiently explained how they would raise the required climate finance, which includes technological and other forms of support, already committed to developing countries, including technological and other support. Some other issues that could not reach a consensus were the inclusion of Common But Differentiated Responsibilities and compensation for loss and damages to poor and small island countries. Other key issues raised revising the 2 degrees target, the fair distribution of emissions reductions commitments and the legality of the climate agreement, for which no conclusions have been drawn thusfar. However, the REDD+ mechanism achieved a breakthrough agreement to include transparency and quality reporting requirements for developing countries' forest programs, adding safeguard mechanisms to protect indigenous rights and recognition of non-market approaches. Finally, the co-chairs of the negotiations were asked to create their own modifications to the text to expedite the process towards a shorter climate deal, which will be presented for countries' approval on July 24th.

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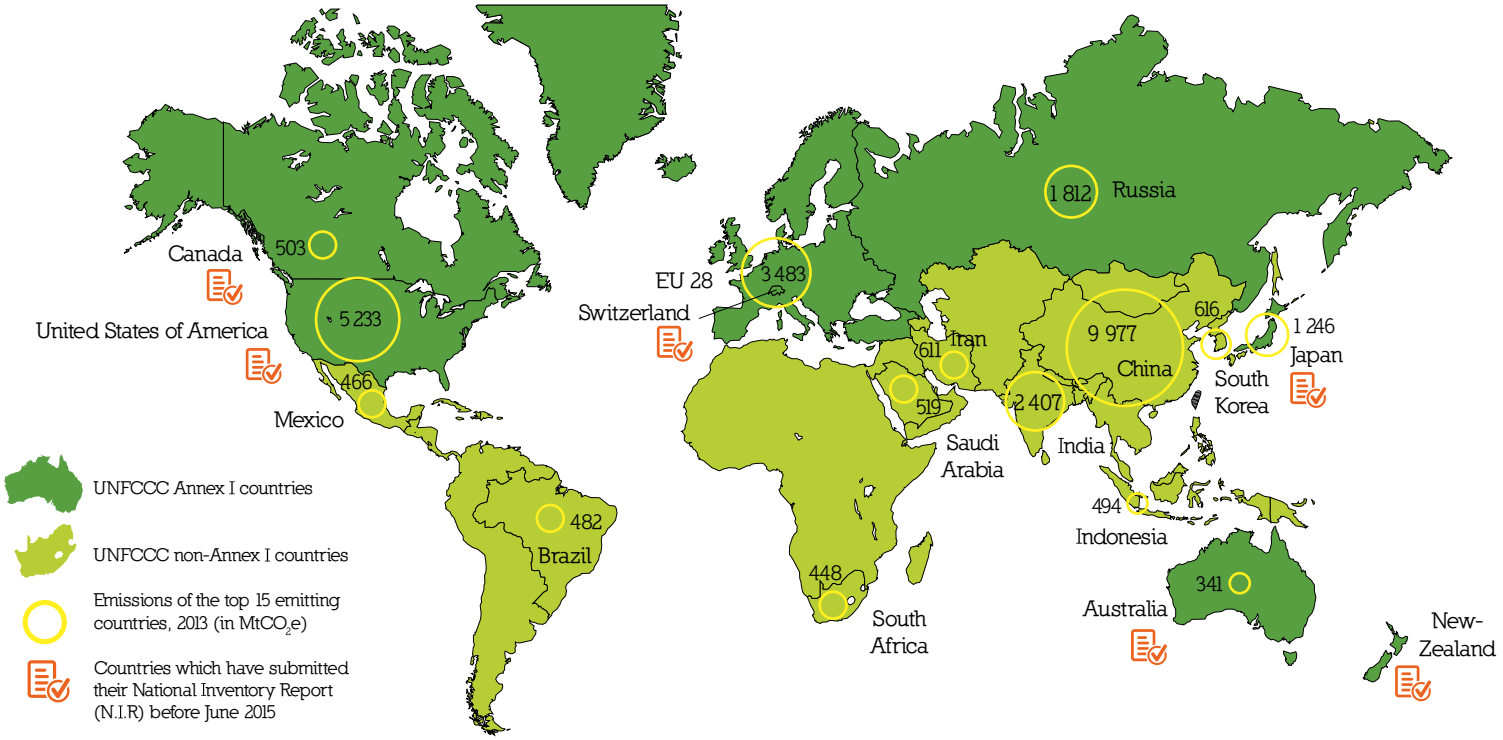
Share of global emissions of countries that have submitted iNDCs

Source : *I4CE - Institute for Climate Economcis, June 2015*

Overview of international reporting requirements for UNFCCC countries and emissions of the 15 highest emitters



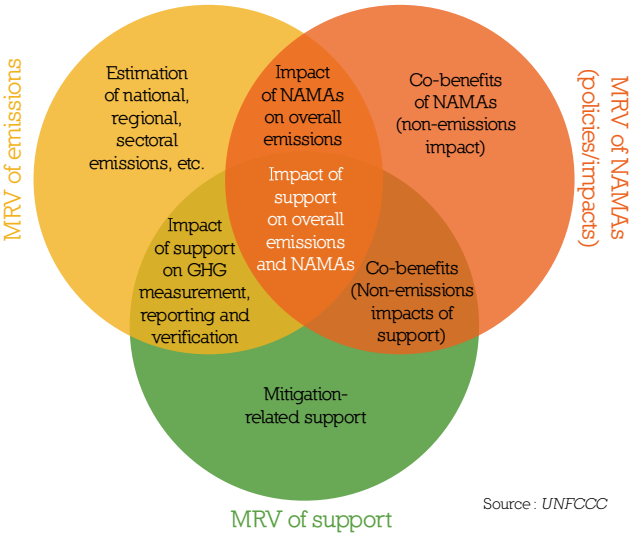
Source: *I4CE - Institute for Climate Economics, in accordance with UNFCCC data, June 2015*

3 MRV initiatives

The UNFCCC guide to MRV for non-Annex I countries

In March 2015, the UNFCCC published guidelines to support developing countries, not included in Annex I of the Convention (those without binding emission reduction targets), to meet the UNFCCC's monitoring, reporting and verification (MRV) requirements. The manual provides necessary information to improve national MRV systems and institutional capacities to enable better reporting to the UNFCCC. It conveys key MRV concepts, the procedures required for a robust MRV process and advice on responding to the UNFCCC's specific requirements. For example, the Manual provides recommendations for establishing methodologies for calculating GHG emissions and national inventories as well as addressing the technological and financial challenges specific to the establishment of an MRV system in developing countries. The Manual also details the reporting requirements for Nationally Appropriate Mitigation Actions (NAMAs), REDD+ programmes and UNFCCC mandated bi-annual reports required from developing countries.

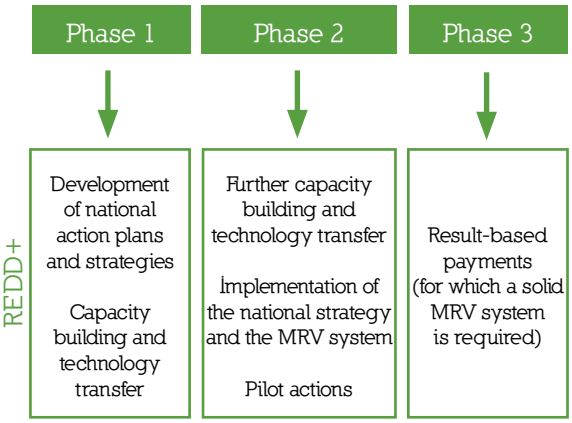
The interactions between national MRV elements of developing countries



Source : *UNFCCC*

REDD+: an international framework for MRV of forestry GHG emissions

Three phases of implementation of the REDD+ framework



Source : *I4CE - Institute for Climate Economics, from decision 1/CP.16*

The founding rules for the global mechanism for Reducing Emissions from Deforestation and Forest Degradation, as well as the development of conservation, sustainable management and increasing forestry stocks in developing countries (REDD+) were established at the UNFCCC's COP16 in Cancun, 2010.

In order to calculate GHG emissions linked to deforestation and forest degradation and acknowledge countries' efforts based on achieved results, it is essential that common MRV rules be adopted at an international level. In December 2013, signatory countries to the Warsaw agreement adopted several resolutions which place MRV at the centre of the REDD+ financing mechanism. Accordingly, remuneration of countries' REDD+ efforts (measured in emissions reduced) is contingent upon verification by a review team. As a result, MRV becomes a vital prerequisite for access to climate funding for developing countries, particularly those beneficiaries of the Green Climate Fund. Developing countries must now comply with MRV procedures which are nearly as rigorous as those governing the National Inventory Reports required from Annex I members, particularly the need for coherence between the GHG emissions data presented every two years and data used to construct baseline scenarios. These technical decisions favour the establishment of an effective framework for REDD+ and demonstrate the importance of harmonised MRV rules to guarantee the accuracy and reliability of an emissions reduction mechanism.

Agricultural carbon offsetting: reducing MRV costs for GHG emissions using a local approach

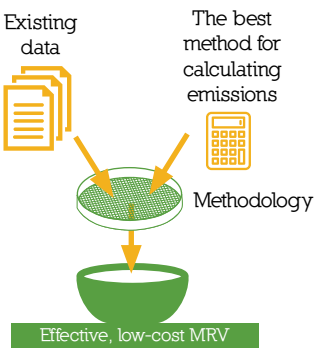
In the United States, in 2012, Michigan State University (MSU) and the Electric Power Research Institute (EPRI), developed a methodology to reduce the level of nitrous oxide (N_2O) released in agriculture adapted to the requirements and standards set by three different voluntary carbon accreditation bodies (ACR, CAR and VCS[1]). The methodology quantifies reductions in nitrous oxide emissions achieved through better management of nitrogen inputs on farmland. This will eventually help to assess mitigation potential of nitrogen in agriculture in the United States and the credits generated will be able to be used by the sectors covered by the California Compliance Offset Program.

Agricultural emissions come in many forms, implying high MRV costs, which can act as a barrier to the development of carbon projects. The methodology proposes two levers to reduce these costs:

- Use of existing activity data collected through agricultural regulations, to limit the additional cost of collecting new data.
- Establishment of a sampling method during the verification process, grouping several farmers within a single project, to reduce reporting and verification costs.

This methodology for calculating the reduction in nitrogen fertilisation highlights the compromise needed between accuracy of measurement and reduction in MRV costs. Such a compromise is only possible through a bottom-up approach, taking into account each project's specific local context (regulations, available data, structure of the sector, type of agricultural system, etc.), which therefore limits the ability to replicate an agricultural MRV methodology from one region to the next.

A calculation methodology resulting in cost effective MRV



Source : *I4CE - Institute for Climate Economics*

[1] American Carbon Registry, Climate Action Reserve, Verified Carbon Standard

I4CE – Institute for Climate Economics is a research institute on climate economics launched in September 2015, supported by Caisse des Dépôts and Agence Française de Développement. This think tank provides independent expertise and analysis on economic issues related to climate & energy policies in France, in Europe and throughout the world. The views and opinions do not engage the responsibility of ADEME
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