

## The Carbon Institute - Training LULUCF experts now and for the future of the Paris Agreement

*“A paradigm shift.”<sup>1</sup>*

*“Exponential increase in human capacity.”<sup>2</sup>*

*“Wanted: Expert Reviewers to Enable Transparency of Climate Action.”<sup>3</sup>*

What do these recent headlines share in common? They all refer to the urgent need for the global community to act now to effectively implement the Paris Agreement. A number of capacity building programs have emerged to support developing countries to collect, synthesize and report essential climate information under the United Nations Framework Convention on Climate Change (UNFCCC), and more recently, for the Paris Agreement. In particular, countries need support to build the necessary national systems to develop greenhouse gas (GHG) inventories and formally communicate national climate information to the UNFCCC through their biennial update report (BURs).

The two primary mechanisms for Parties to communicate their climate actions to the global community under the Paris Agreement will be through their nationally determined contributions (NDCs), the first of which has already been submitted, and their biennial transparency reports (BTRs). The BTRs will include information on the country’s national level GHG emissions/removals and progress made towards reaching the goals in their NDC. The reporting and review of these BTRs is a central component of the enhanced transparency framework (ETF). The ETF is, in turn, the bedrock of the Paris Agreement. Meeting the reporting and review demands of the Paris Agreement will be a difficult undertaking, particularly for developing countries. To effectively implement the Paris Agreement and realize actual changes in the atmosphere we need an **immediate increase in capacity building for both reporters of BTRs (i.e. countries) and the experts who will review these reports for adherence to the rules.**

The Carbon Institute (TCI) is one such solution. TCI’s mission is to establish university level programs to train a new workforce on carbon accounting while building platforms that reduce carbon emissions, increase carbon sequestration, and enhance resilience to climate change.

### The Issue

Under the Paris Agreement, by the end of 2024, all countries must regularly submit reports on a range of domestic circumstances related to climate change. These circumstances include estimates of national GHG emissions and removals, progress towards achieving NDCs, actions taken to prevent or adapt to climate change, and financial and technical support provided (by developed countries) or support needed and received (by developing countries).

This information will be reported through BTRs. These BTRs will be reviewed by a group of experts and ultimately serve as an important input to a global assessment of effort and progress (i.e. “global stocktake”) under the Paris Agreement. Parties’ information must be reported in a transparent and accurate manner

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<sup>1</sup> <https://www.wri.org/publication/capacity-building-paris-transparency>

<sup>2</sup> [http://carboninstitute.org/wp-content/uploads/2017/03/IAP-Report\\_Final\\_Mar6\\_2017-rev2.pdf](http://carboninstitute.org/wp-content/uploads/2017/03/IAP-Report_Final_Mar6_2017-rev2.pdf)

<sup>3</sup> <https://unfccc.int/news/wanted-expert-reviewers-to-enable-transparency-of-climate-action>

in order to build the trust and confidence of the global community. The collective review of national BTRs will also inform how well international efforts are working to hold the global temperature increase to the objective of the Paris Agreement, which is well below 2 °C above pre-industrial levels while pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels.

The Paris Agreement established the ETF to foster a community of trust. As a central element of the Paris Agreement, it's the main platform for national reporting and review for GHG inventories, progress in meeting pledges (NDCs), and other information mandated to be collected. The ETF's detailed procedures for both developed and developing countries build on the transparency arrangements under the Convention and the Kyoto Protocol. Modalities, procedures and guidelines (MPGs) for reporting and review under the Paris Agreement were finalized at COP24 in Katowice, Poland for all countries.<sup>4</sup>

## The Challenge

The challenges for implementing the ETF are multifold.

### Capacity for Reporting

Although developing countries have been required to submit a GHG Inventory on a biennial basis since the end of 2014 (with some flexibility for certain countries), as of 16 April 2019, only 45 countries have managed to submit their first BUR, and only four have managed to continue submitting on an approximate biennial basis.<sup>5</sup> If we consider that there are 153 Parties that are considered in some stage of developing, that means 108 developing country Parties have yet to submit a BUR. Why?

One reason is that many developing countries have not yet created coherent systems to collect, organize and submit climate information. Countries need to identify and fund responsible ministries, (coordinating, as necessary, funds received from the Global Environment Facility), operationalize data collection systems, and develop data management and archiving procedures so that they can collect, report and manage all the required information. At the same time, there are an insufficient number of experts trained on the use of the international reporting guidelines (e.g. *the 2006 IPCC Guidelines*). These guidelines are the backbone of how countries estimate and report their emissions and uptake of GHGs over time and they are therefore critical to determining if the planet as a whole is meeting intended GHG targets.

**As a result of these capacity shortfalls, reporting by developing countries is sporadic, and often relies on external consultants to draft one-off reports.** Unless things change, two years down the road when the next international report is due, the process will start again, **as countries will still be lacking the necessary capacity for reporting.** This dynamic must change for the Paris Agreement to succeed.

### Capacity for Review

**Having a sufficient number of qualified experts to support the existing review processes under the Convention and the Kyoto Protocol is a perennial challenge.** The current review processes demand a large number of experts, on the order of 450 experts every two years.<sup>6</sup> Teams of experts must be formed taking into account geographic diversity and gender balance. In crafting these teams, the secretariat faces challenges of numbers (not enough experts), regional representation (not enough developing country representatives) and capacity (experts are not sufficiently trained to do the job).

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<sup>4</sup> Decision 18/CMA.1

<sup>5</sup> <https://unfccc.int/BURs>

<sup>6</sup> For GHG inventories, national communications, biennial reports and the technical analysis under the BUR.

Some worrying statistics from the current review process that must be dealt with are (1) the relatively large number of experts declining to support a review in any given year (approximately 28 percent of experts invited to support the GHG inventory review process in recent years declined) and (2) the relatively small pool of total experts supporting current review and technical analysis processes (between the year 2000 and 2018, only 503 experts participated in GHG inventory review activities).<sup>7</sup> Considering these experts are responsible for reviewing the inventories of all GHGs for all the nations in the world, this is simply not enough experts for such an important job.

With an increasing number of reviews required under the Paris Agreement, experts who have their own day jobs have more competing demands on their time. And they are getting tired. Every year, the secretariat and lead reviewers in the current processes communicate their pleas for Parties to nominate more experts to the Roster of Experts who are qualified and authorized to do the reviews.<sup>8</sup>

**Under the Paris Agreement, the demand for experts is expected to increase threefold to an estimated 1,500 on a biennial basis.**<sup>9</sup> This increase will require a coordinated effort to train future experts on the requirements of reporting and the methods for measuring GHGs. Experts will need to answer such questions as, what are the best methods for estimating GHG emissions from power plants in the United States? What are the best methods for estimating flatulence from cows in India? How does a country define what a forest is? How can Argentina project future carbon emissions and uptake in wetlands? How do you report a forest reference emissions level in the REDD+ Framework.<sup>10</sup>

### LULUCF: A particular challenge

In GHG inventory terms, the global economy is composed of five sectors: energy, industrial processes and product use (IPPU), agriculture, waste, and land-use, land use change and forestry (LULUCF). However, all sectors are not equal. The relative importance of any one sector for a country's total net GHG emissions or mitigation potential differs. For most developed countries, the energy sector is the largest source of emissions; for some developing countries, emissions from deforestation are the major driver.

From an expert reviewer's perspective, LULUCF is a particularly challenging sector to review. Unlike the fairly stable methods for estimating stationary combustion emissions from the energy sector, methods for estimating LULUCF sector emissions and removals continue to evolve. The 2006 IPCC Guidelines contained methods for LULUCF that updated the earlier 2003 Good Practice Guidance for Land Use, Land-Use Change and Forestry (which in turn updated even earlier international guidance). Then, the 2006 IPCC Guidelines themselves were quickly updated for estimating emissions/removals for some wetlands activities with the *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. The guidelines for LULUCF will again be updated through the *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*.<sup>11</sup>

**The guidelines for the LULUCF sector continue to evolve with the science, requiring both reporters and reviewers to be ever vigilant and maintain their knowledge of the latest requirements.** Additionally, the reporting and reviewing of the LULUCF sector requires very specific

<sup>7</sup> FCCC/SBSTA/2018/INF.3. These totals do not include 12 observers that participated in the reviews between 2000 and 2008.

<sup>8</sup> For some recent examples of conclusions from lead reviewers under the current review processes under GHG inventories and NC/BR, you can refer to [https://unfccc.int/sites/default/files/resource/04\\_GHG-LRs-2019-conclusions\\_0.pdf](https://unfccc.int/sites/default/files/resource/04_GHG-LRs-2019-conclusions_0.pdf), FCCC/SBSTA/2014/INF.17, FCCC/SBSTA/2015/INF.9, FCCC/SBSTA/2016/INF.11, FCCC/SBSTA/2017/INF.4 and FCCC/SBSTA/2018/INF.3 (for GHG inventories) and FCCC/SBSTA/2016/INF.8, FCCC/SBSTA/2017/INF.4 and FCCC/SBSTA/2018/INF.5 (for NC/BR).

<sup>9</sup> Hanle, L., Gillenwater, M., Pulles, T., Radunsky, K. (2019). "Challenges and Proposed Reforms to the UNFCCC Expert Review Process for the Enhanced Transparency Framework." Seattle, WA, Greenhouse Gas Management Institute. <http://capacitybuildingcoalition.org/discussion-paper-series/>

<sup>10</sup> REDD+ informally refers to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries

<sup>11</sup> [https://www.ipcc-nggip.iges.or.jp/home/2019refinement/docs/1507\\_Summary\\_TA-AFOLU.pdf](https://www.ipcc-nggip.iges.or.jp/home/2019refinement/docs/1507_Summary_TA-AFOLU.pdf)

technical expertise. It is difficult to quantitatively assess this, but in general it is easier for experts in the energy, IPPU, agriculture and waste sectors to support each other during the review process by reading the relevant volume of the IPCC Guidelines, than for these same individuals to support the LULUCF experts. It simply is more challenging for an expert to review the IPCC Guidelines for reporting the LULUCF sector and understand how everything fits together.

The LULUCF experts on any technical expert review team (TERT) reviewing BTRs, will play a unique role. According to the MPGs<sup>12</sup>, each TERT must include an expert for each GHG inventory sector, as well as expertise on mitigation activities, support and cooperative approaches, internationally transferred mitigation outcomes, and LULUCF. For non-LULUCF sectors, the GHG inventory experts will probably be able to focus exclusively on the review of the GHG inventory, leaving review of other thematic areas (e.g. mitigation) to other experts on the team. However, due to the specific technical skill of LULUCF experts, it is easy to imagine that LULUCF experts will be asked to take on multiple roles on the team, assessing the GHG inventory, as well as all other LULUCF reporting, including REDD+. This will not be an easy task and requires sufficiently trained and dedicated individuals to ensure success.

**As a result, there is an urgent need for more qualified LULUCF experts to support reporting and review under the Paris Agreement.** As of 16 April 2019, there were 1,953 experts nominated to the Roster of Experts<sup>13</sup> and only 277 have demonstrated expertise in LULUCF. Of these 277, only those who have passed the necessary training are able to actively conduct reviews. And of those who have passed the necessary training, not all are available every year.

**The world needs more highly trained and dedicated LULUCF experts to support the current transparency process under the Convention as well as the ETF under the Paris Agreement.**

## The Solution

**The Carbon Institute (TCI) is a scalable solution to the known challenges of the Paris Agreement.** TCI's mission is to power international academic and government partnerships to create self-sustaining, solution-oriented professional training programs in carbon accounting. TCI has already demonstrated success through its pioneering programs at universities in California, China, Indonesia, Cameroon, the Republic of Congo and the Democratic Republic of Congo.

**Universities create a stable and sustainable source of experts.** The potential for universities to provide a long-term solution to the challenges facing the current international reporting and review system is becoming more widely known. A key recommendation of the Coalition on Paris Agreement Capacity Building is to develop academic programs dedicated to climate disciplines to produce a flow of knowledgeable and competent experts.<sup>14</sup> Universities hold a unique position in most countries in that they are not as susceptible to the policy and political fluctuations of governments. Universities can also be more agile and reflect the latest social needs in their courses and departments. Most recently, the Project for Advancing Climate Transparency also acknowledged the special role universities can play, highlighting a case study in the Dominican Republic. The Dominican Republic, as part of a proposal under the

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<sup>12</sup> Para. 176

<sup>13</sup> <https://www4.unfccc.int/sites/roestaging/Pages/RosterOfExperts.aspx>

<sup>14</sup> [http://capacitybuildingcoalition.org/wp-content/uploads/2016/04/Coalition-Strategy-for-Capacity-Building\\_hi-res.pdf](http://capacitybuildingcoalition.org/wp-content/uploads/2016/04/Coalition-Strategy-for-Capacity-Building_hi-res.pdf)

Capacity Building Initiative for Transparency (established by the Parties in crafting the Paris Agreement) will train experts in the requirements of the international process through national university programs.<sup>15</sup>

**The core curriculum of TCI was designed to be comprehensive and advanced.** The curriculum developed by the TCI over the past three years consists of six courses that are directly relevant for reporters and reviewers serving under the current system of the Convention and the forthcoming Paris Agreement. For example, the course on “Policy Context” incorporates the latest information on UNFCCC guidance for REDD+ and NDCs. The updated version of the course due out in May 2019 will include training materials on the “Paris rulebook.” The TCI has a dedicated course on the “2006 IPCC Guidelines,” the most essential knowledge for LULUCF reporters and reviewers. The TCI also has curriculum on “Applying and Communicating Results,” which is an essential skill for both reporters and reviewers, whether they are communicating national information in the form of a BTR, or communicating the results of a review to an international audience. The core TCI curriculum imparts additional highly technical expertise to develop the LULUCF experts of tomorrow, with course work in “Data Collection,” “Remote Sensing” and “Terrestrial Carbon Statistics.” The courses also teach geospatial statistics, algorithms used to convert volumes of trees to tons of carbon, and ways to propagate error through complex models.

**TCI courses are tailored to national circumstances.** The basic idea behind TCI is that there is a core set of comprehensive curriculum, developed by the founding organizations of TCI, that are then tailored to national circumstances. When reviewing the Chinese and Indonesian TCI programs last year, I saw first hand how the countries tailored the core courses to meet their specific needs. The courses are designed to carefully fill technical gaps in carbon accounting as identified by each country. The technical needs of the country are the key drivers in prioritizing each national TCI course. Instructors are selected from the “best of the best” in each nation, and provided with curriculum and faculty mentoring to make sure they deliver great trainings. Where deemed appropriate by the country, the TCI courses are translated into the local language. Homework, case studies, field research and the use of real data are embedded into the coursework. Students graduating from these courses are given relevant international exposure, as well as the potential to become key stewards for their country currently and for the years to come.

## Conclusion

**The key next step is bringing TCI graduates formally into the UNFCCC process.** There is a clear need for more LULUCF experts to support the current reporting and review processes under the Convention and the Kyoto Protocol. This demand will only increase under the Paris Agreement. The Carbon Institute has demonstrated the ability to train LULUCF experts for the world we face. We must connect these processes. Graduates of university programs like TCI must be given the opportunity to engage in the international processes, either as part of their national system for reporting, or by serving as international experts on the TERTs. Clear pathways should be developed and promoted in the host countries of these TCI university programs to enable graduates to be nominated to the Roster of Experts. It is also essential that these experts can enroll in the exams required under the current regime as well as for the future Paris Agreement training programs. This way they will be formally qualified to serve as experts and fill a critical gap in the implementation of the Paris Agreement.

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<sup>15</sup> Dagnet, Y., N. Cogswell, N. Bird, M. Bouyé, and M. Rocha. 2019. “Building Capacity for the Paris Agreement’s Enhanced Transparency Framework: What Can We Learn from Countries’ Experiences and UNFCCC Processes?” Working paper. Washington, DC: Project for Advancing Climate Transparency (PACT).

Over the years, I have been introduced to many students, industry experts, and government experts who would make great reviewers under the UNFCCC. However, most of these bright professionals did not know how to pursue the process of becoming an expert to support the UNFCCC, or were not given the opportunity to do so. Establishing clear procedures between the host university and the national government to help qualified TCI graduates become official expert reviewers on the UNFCCC Roster of Experts would help ensure the Paris Agreement has enough capacity to implement the next phase of international climate change policy.

My reflections here focus on what I know best, the need for more experts trained in LULUCF reporting and review. TCI is a viable and scalable solution to address the current shortage of LULUCF experts domestically and internationally to support implementation of the Paris Agreement. TCI graduates can also make a significant contribution beyond serving as reporters or reviewers under the Paris Agreement. TCI graduates will acquire the necessary education to support countries in classifying their national landscape, developing policies to enhance mitigation and adaptation activities, and engaging in real, on-the-ground projects to reduce emissions from deforestation or enhance carbon stocks. Achieving the goals of the Paris Agreement will require applied knowledge in all of these fields and TCI graduates will be key to this success.