

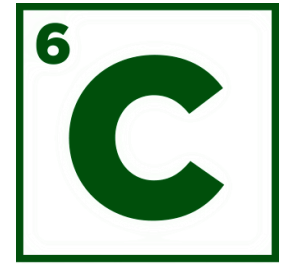
Terrestrial Carbon Accounting Certificates: Enhancing Capacity for Countries' Transparency and MRV Frameworks through International Academic Partnerships

John Niles

Director, The Carbon Institute

Greenhouse Gas Management Institute

Terrestrial Carbon Accounting Questions



TCA estimates carbon stocks and fluxes from forests and other lands for policy applications

1. How would you categorize all the lands in your country?
2. Imagine a forest. There are living trees with branches, leaves, and roots, understory vegetation, different types of soil, and leaf litter and dead trees on the forest floor. How do you calculate the carbon in these different “pools”? What types of activities will release this carbon?
3. Remote sensing/GIS can estimate the carbon stored in forests. How can we verify the results of these analyses?
4. What are some of the sources of uncertainty when we estimate emissions and removals in forest land? Why do we want to minimize uncertainty?

Overview of GHG Management Institute

- IPCC Guidelines Course Series
- UNFCCC Lead Reviewer Training (23 courses)
- The Carbon Institute
- “Hybrid” and cooperative learning and working models
- Carbon Management Journal
- Entrepreneurial model: educational research-driven, cost-efficient, expert mentor support, network-based, goal-oriented.

Alumni in over
160 countries

Over 3,500
experts trained

Largest
training
curriculum

Online and
onsite

16 GHGMI Online Courses

For the Measurement, Reporting, and Verification of Greenhouse Gases



201 BASICS OF ORGANIZATIONAL GHG ACCOUNTING



211 GHG INFORMATION MANAGEMENT SYSTEMS



202 BASICS OF PROJECT-LEVEL GHG ACCOUNTING



301 GHG ACCOUNTING FOR FOREST INVENTORIES



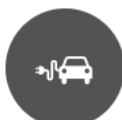
302 GHG ACCOUNTING FOR FOREST AND OTHER LAND USE PROJECTS



311 GHG ACCOUNTING FOR LANDFILL METHANE PROJECTS



312 GHG ACCOUNTING FOR COAL MINE METHANE PROJECTS



321 GHG ACCOUNTING FOR ENERGY EFFICIENCY PROJECTS



331 GHG ACCOUNTING FOR RENEWABLE ENERGY PROJECTS



401 GHG VERIFICATION FOR INVENTORIES AND PROJECTS



501 IPCC: INTRODUCTION TO CROSS-CUTTING ISSUES



511 IPCC: ENERGY



521 IPCC: INDUSTRIAL PROCESSES AND OTHER PRODUCT USE



531 IPCC: AGRICULTURE



541 IPCC: FORESTRY AND OTHER LAND USES



551 IPCC: WASTE

The Carbon Institute

Partners and Donors



国家林业局调查规划设计院



Supported by:



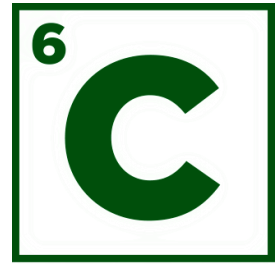
Federal Ministry
for the Environment, Nature Conservation,
Building and Nuclear Safety

based on a decision of the German Bundestag



ghg management
institute

Our Model

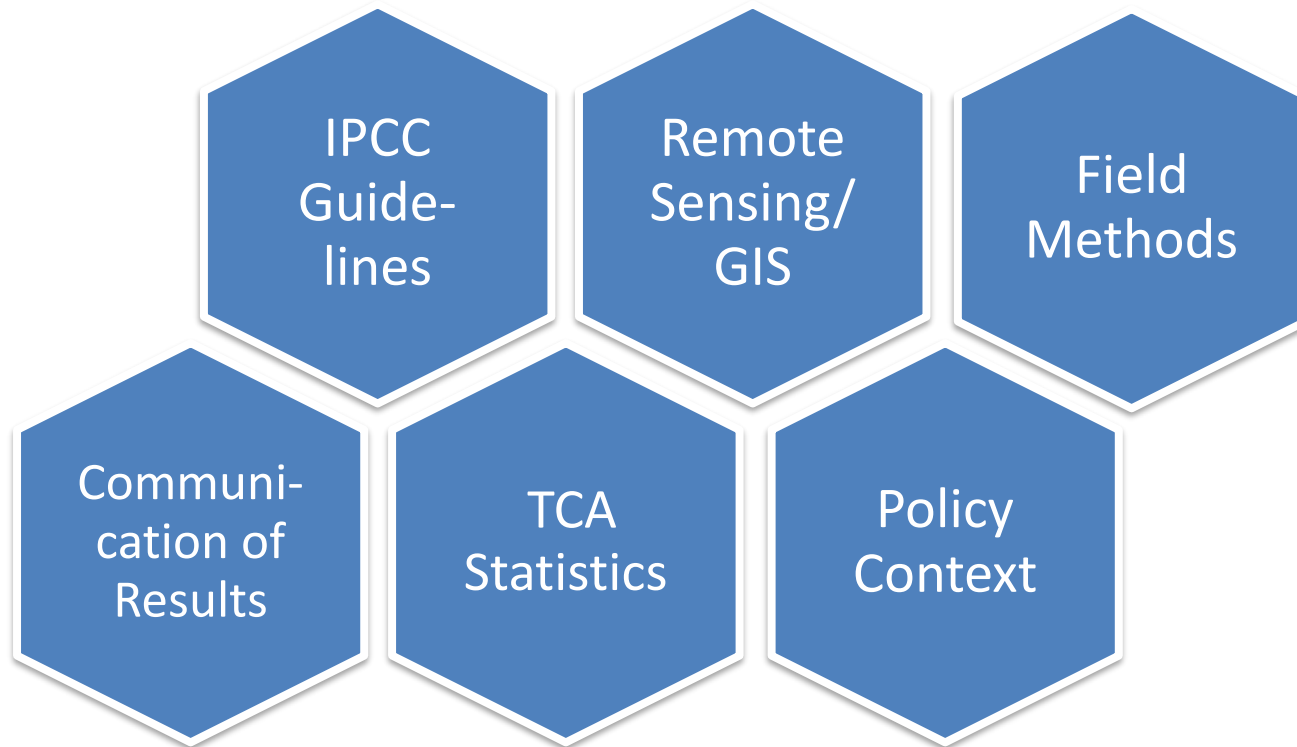


Applied Science for Government Needs

- The Carbon Institute Handshake: develop government and academic partnerships
- Assess and fill gaps in existing Terrestrial Carbon Accounting (TCA) capacity of government
- Create world-class TCA Certificate programs, run and operated by national universities and organizations
- Mentor faculty and graduates
- Focus on comprehensive (advanced) understanding and sustainability of programs

Six Course Areas

For a Comprehensive Terrestrial Carbon Accounting Curriculum



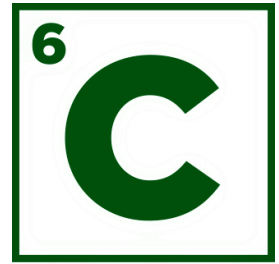
Focus on competency development

Supported by exercises and case studies

Adapted to national context and government needs

University of California San Diego 2013

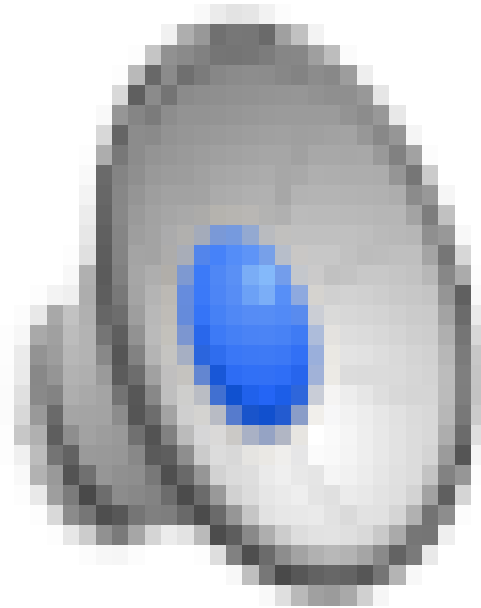
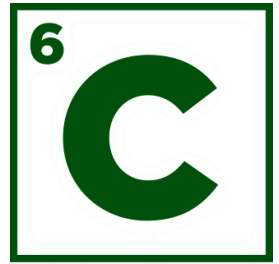
First Accredited Advanced Certificate in Terrestrial Carbon Accounting



- 145 hours of instruction in 6 integrated classes
- 150 applicants for 24 positions
- Taught at University of California San Diego (UCSD)
- Overwhelmingly positive reviews
- Important lessons learned, ideas for improving

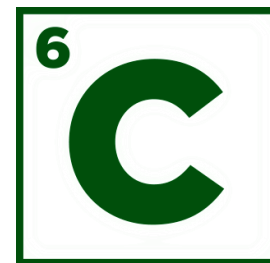
University of California San Diego

First Accredited Advanced Certificate
in Terrestrial Carbon Accounting



Improving Key TCA Competencies

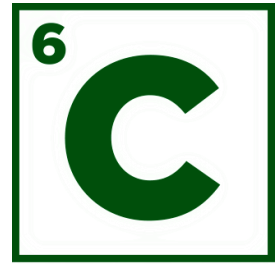
Student Self-Assessment Improvement Scores



Class Name	Average Pre-Course Self Score	Average Post-Course Self Score	Improvement
Policy Contexts for Terrestrial Carbon (<i>BIOL-40285</i>)	3.13	4.00	0.87
Measuring Terrestrial Carbon Change, Modeling Using GIS, Remote Sensing, and Activity Data (<i>BIOL-40286</i>)	2.17	3.69	1.52
Classifying Forest and Land Cover (<i>BIOL-40287</i>)	2.57	3.60	1.03
Terrestrial Carbon Accounting Data Collection & Evaluation (<i>BIOL-40288</i>)	2.57	3.88	1.31
Statistics for Terrestrial Carbon: Data Aggregation, Uncertainty Analyses & Error Propagation (<i>BIOL-40289</i>)	2.22	3.63	1.41
Applying and Communicating Analysis Results (<i>BIOL-40290</i>)	2.83	3.75	0.92

International Advisory Panel:

High-level and technical recommendations



Dr. Ralph Keeling (Chair)



H.E. Mr. Manuel Pulgar-Vidal



Dr. Nur Masripatin



Dr. Yonny Koesmaryono



Mr. Yan Lingchun



Dr. Guangyu Wang



Dr. Xu Zehong



Dr. Hannes Bottcher

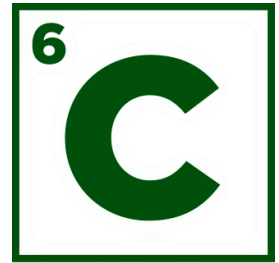


Mr. Ramiro Fernandez



Ms. Alexandra Neidermeier

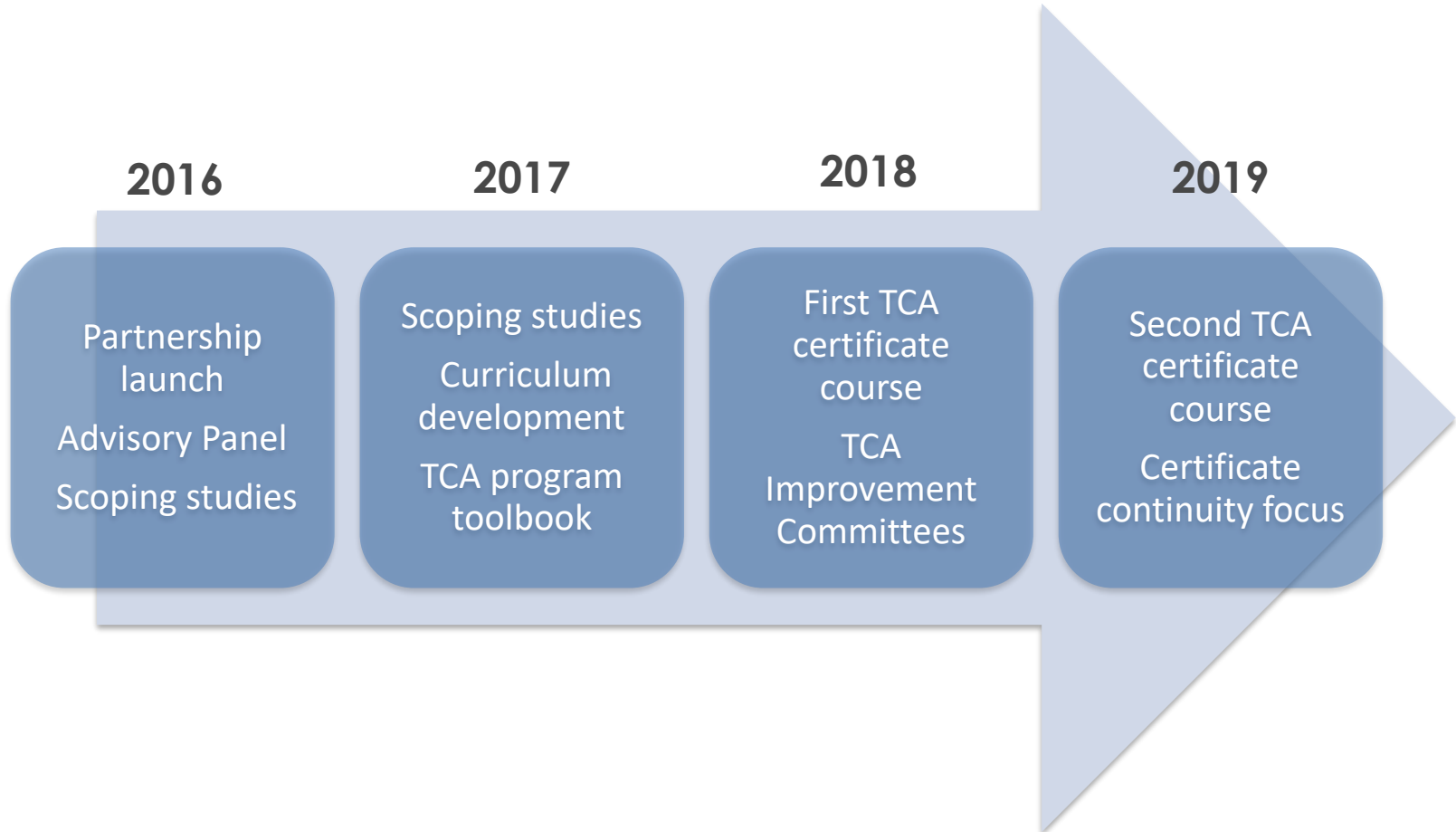
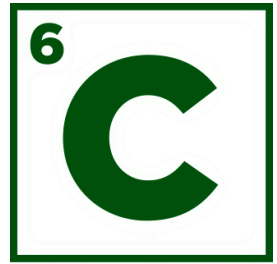
Best practice recommendations for carbon accounting capacity building



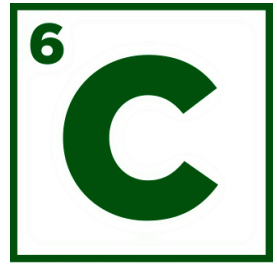
- **1. Engage government stakeholders** at multiple levels, across multiple ministries and agencies
- **2. Design programs to meet practical policy needs** and learner career motivations
- **3. Require international standardization**, while customizing curriculum to national priorities
- **4. Develop technical expert judgment** through critical thinking exercises and by teaching core principles
- **5. Have learners use real data for analyses** to develop real, practical skills and create practical outputs
- **6. Address the need for verification** in national MRV systems and the Enhanced Transparency Framework
- **7. Evolve** with the changing policy landscape and **iterate** curriculum for continuous improvement

Timeline:

For deploying Terrestrial Carbon Accounting Certificates



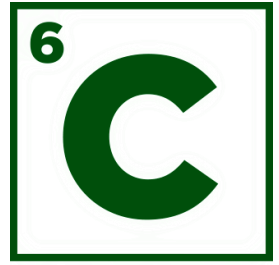
Work in progress, adapting to real needs:



Items to determine, strategic input appreciated

- Curriculum being adapted to address nationally-appropriate core competencies
- Programs being embedded in host academic institutions for first run in 2018
- Leveraging relationships with government to recruit learners from target audience
- Scaling to future regions, developing as an international standard

Carbon Accounting Capacity



Why it matters

- Carbon accounting is not an academic challenge.
- It is not a reporting challenge.
- It is an integral, underlying necessity for meeting the objectives of the Convention and for implementing the Paris Agreement.