SUCCESS STORIES

COLLABORATIVE RESEARCH GENERATES COUNTRY-SPECIFIC TREE ALLOMETRIC EQUATIONS IN VIETNAM

With support from the UN-REDD Programme, six national institutes and the Vietnam Forestry Administration successfully came together to improve Vietnam's forest biomass assessment.

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The Challenge

REDD+ has the potential to deliver climate change mitigation through sustainable means, and to do so, accurate assessments of forest carbon stocks and carbon stock changes is vital. Globally, many assessment models have been developed for several forests on different continents. However, their applicability to the unique forests found in Vietnam hasn't been tested. Applying inappropriate models in Vietnam would risk significant uncertainty, resulting in the over/under-estimation of forest carbon stocks.

With the onset of REDD+ preparations in Vietnam, national dialogue pointed out this need to develop models that reflect the specific of Vietnamese forests, and to streamline information into a national database.

Interagency collaboration is not a common practice, it was necessary to support coordination among different Vietnamese institutions involved in forestry research.

The Initiative

In forestry, allometry refers to statistical relationships between various characteristics of tree size (such as diameter and tree height) and more difficult-to-measure variables (such as volume and biomass). Allometric equations can be used to assess many forest services such as timber production, but are also used in climate change mitigation efforts.

In the context of REDD+, allometric equations are needed to assess forest carbon stocks and carbon stock changes, and tree allometric equations are considered one of the most important sources of uncertainty in carbon stock assessment. The use of inappropriate equations can lead to important errors in calculations, and the greater the uncertainty, the less credible the reduction of emissions.

These allometric equations are part of the system of assessment that is needed to be customized to Vietnam's unique ecology for emissions reporting to be successful. One of the activities implemented by the UN-REDD Programme in Viet Nam is to support the development of allometric equations for effective reporting of emission reductions. To begin the process towards achieving that goal, in 2010 the UN-REDD National Programme facilitated discussions among national practitioners of forestry research, inventory and academic institutions, along with the Vietnam Forestry Administration (VNFOREST). Together they proposed a plan to develop Vietnam-specific allometric models for different forest ecosystems.

It was agreed that the country would benefit from a single national database that could consolidate all

the allometric models, and as much of the related research data as possible. Access to improved allometric equations would benefit users working on forest resource assessment bioenergy trade volume and carbon stocks.

Research teams from the participating national institutes (the Forest Science Institute of Vietnam, the Department of Forest Resource and Environment Management of the Tay Nguyen University, the Forest Inventory and Planning Institute (FIPI) and its Center for Forest Information and Consultancy, the North-West Sub-Forest Inventory and Planning Institute, and the Vietnam Forestry University) all then collaborated to implement the following activities:

i) Design of a national manual for destructive measurement,

ii) Collection and entry of existing allometric equation data into a central database,

iii) Conduction of destructive measurements in five eco-regions,

iv) Statistical and laboratory analysis for model development and selection, and

v) Report on the developed allometric equations.

A technical training workshop held by FAO/UN-REDD also took place in 2012 after data collection through destructive measurement to provide guidance on statistical analysis and model development.

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The Impact

Building close collaboration and coordination between the national institutes required much more time and engagement in dialogue than had been anticipated, but having now been established with the support of the UN-REDD programme, the results have been worth it. The positive working relationships that have been created have opened the way for enriching and sustainable processes in which country practitioners are able to compare methodologies and learn from one another going forward.

As of early 2013 the first phase has been completed, and application of Vietnam-appropriate allometric equations is also expected to increase the credibility of the calculation of forest carbon stocks in Vietnam, and therefore, the assessment of reduction of emissions. With the aim of maximizing the benefits from the entire exercise, the research team and VNFOREST decided to publish the main research outputs on the Viet Nam REDD+ website. The intent is not only to share the work with a wider research community, but also to streamline the data within the country, and for neighboring and regional countries to make use of the data as they see fit. This also complies with the United Nations Framework Convention for Climate Change reporting principles, where the accounting system of emissions reductions in the forestry sector must be as transparent, accurate, consistent, comparable and complete as possible.

Working together and looking ahead, the participating national institutes have already identified the need to address further areas (including allometric models for mangrove forests and methods to assess national forest biomass), and they have discussed a next phase plan to be supported by FAO through the UN-REDD Phase 2 Programme for Vietnam.

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