Developing University curricula in MRV for REDD+

Adequately skilled personnel are a prerequisite for the implementation of Measurement, Reporting and Verification (MRV) systems for REDD+. It is therefore imperative that universities in REDD+ countries integrate MRV curricula in the education in forestry and natural resources management. The Norwegian Forestry Group, with its proven academic record and broad operational experience from all aspects of MRV, will assist in the development and implementation of the MRV coursework.

To be able to measure the forest is an essential aspect of REDD+ (Photo: G-H Strand/NIBIO)

Measurement, reporting and verification (MRV)

Measurement, reporting and verification (MRV) is an essential aspect of the incentives for developing countries to Reduce Emissions from Deforestation and Forest Degradation (REDD) and promote conservation and sustainable management of forests (REDD+). The role of the MRV systems is to provide the documentation needed for developing countries to receive the payments for results achieved in reducing emissions, enhancing carbon stocks and conserving forest resources.

MRV systems cannot be established without properly trained personnel at several levels. An educational infrastructure is required and universities form the backbone of the training system. University graduates with a good overview of the MRV system and practical experience with the different processes involved in MRV will themselves be able to train the national technical staff. Assistance to universities is therefore a key element in the NFG strategy to support MRV for REDD+.

NFG can contribute to the development of relevant curricula, establishment of training and laboratory facilities and implementation of MRV coursework. NFG can also provide seconded faculty during the build-up phase. The goal is, however, to establish a training facility a run by proficient local staff and faculty.

The Measurement components of an MRV system consist of a Land Monitoring System and a National Forest Inventory. These two systems provide input to the Reporting component. Reporting is the compilation of land use and forestry sector data for the National GHG Inventory, but also providing documentation of national forest conservation and sustainable forestry practices. Finally, the Verification component of the MRV system includes an assessment of the completeness, consistency and reliability of the information.

A university curriculum in MRV is conveniently included as a specialization within broader studies in forestry, geography or natural resources management. The main constituents of the curriculum follow from the content of MRV system, and can easily be integrated with other courses offered by the university. es, land users, farmers, foresters, tree growers, professionals, NGOs and civil society, environmentalists and nature conservationists.

The MRV information system

An MRV information system course explains the broader setting and elements of MRV within REDD+, as well as the context of climate change; including organizational and institutional aspects. The course introduces the concept of MRV as an information system, addressing data flow, data management and reporting obligations. Rules and systems for national GHG reporting are handled, together with arrangements for documentation of forest conservation efforts and sustainable forestry.
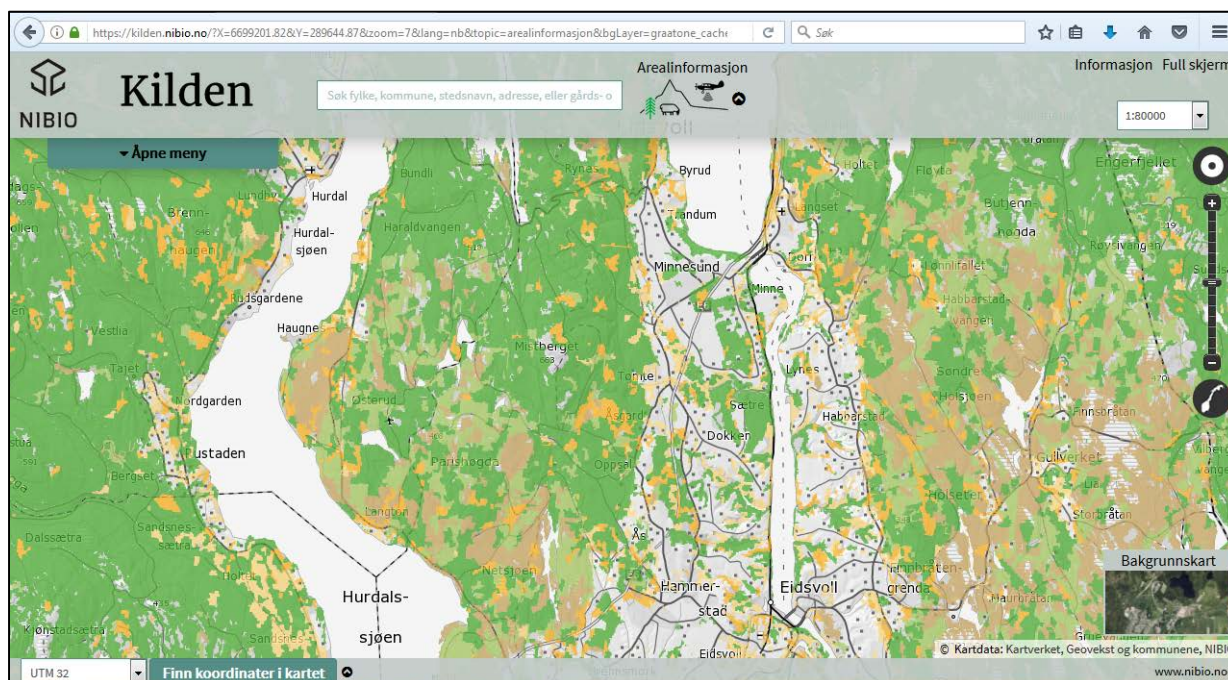
Forest map, created by combining field inventory data and satellite images. The map is available to decision makers and the general public through the web-based information system "Kilden" (https://kilden.nibio.no).

GIS and Land monitoring

One or more courses in GIS and Land monitoring offers basic training in Geographic Information Systems and applications in land monitoring. Essential topics along with the GIS technology are land classification and field inventory methods directed towards the specific needs of a land monitoring system.
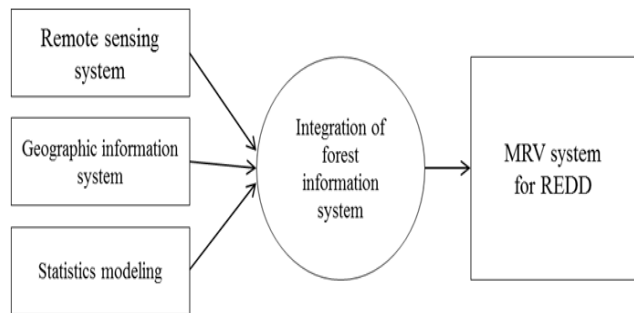
Remote sensing

One or more courses in Remote sensing offer training in remote sensing methods and image interpretation, with particular attention to applications in land monitoring and forestry. Radar and lidar data should be addressed along with the usual optical imagery.

Forest inventory

A Forest inventory course offer training in forest mensuration and inventory methods, together with the organizational and institutional aspects of running a national forest inventory.

Forest inventory (Photo: Lars S. Dalen/NIBIO)

Statistics

Statistics is required for adequate sampling and data analysis of land monitoring and forestry data, and is also a key methodology in the Verification component of MRV. Courses providing a

good basis in the necessary statistical theory and methods are therefore part of the basic training of the MRV specialists.

The role of NFG

The Norwegian Forestry Group and its partner organizations have broad experience with all aspects of the MRV system - from Norway as well as other countries – and a record of setting up courses and teaching at universities around the world. NFG will assist national and regional universities with the development and implementation of MRV relevant curricula customized to the existing academic content. NFG can also help assess the existing teaching infrastructure and plan the necessary strengthening of the laboratories and other facilities. Experts from NFG can participate as co-teachers during the initial phase, until local teachers are ready to take full responsibility for the courses.

Reference projects

National Forest Inventory and Carbon monitoring in Norway

Establishing a National Forest Inventory in Serbia

Introduction of of remote sensing courses in Forestry and Agricultural universities in Bosnia-Herzegovina and Serbia

Geographic information science curricula at the Agricultural Universities in West-Balkan

Introduction of Geographic information systems for natural resources management, Asian Institute of Technology, Thailand

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