

The Trust Fund for the Administration of the Forest Development Program, and the Inventory and Monitoring of Jalisco's Natural Resources

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Abstract—In 1966 the State Government of Jalisco conducted a review of the state's forest sector. A new forest agenda resulted from this review, which led to a set of ground breaking actions creating a long term forest development program known as FIPRODEFO (Trust Fund for the Administration of the Forest Development Program of Jalisco). Among the relevant issues, the survey revealed the need to reclaim damaged forest land, strengthen silviculture programs for natural temperate forests, support commercial plantation efforts, update and improve forest industry infrastructure, and improve information gathering and dissemination in support of policy planning. Solving these problems became the agenda for FIPRODEFO.

Disappointment with quality and opportunity in national forest statistics reports, and the clear notion that information gathered for national purposes lack the detail and depth to support local decisions was building a demand for a state of the art statistical and geographical information system tailored for Jalisco's conditions and agenda. Responding to this opportunity, FIPRODEFO joined in a strategic knowledge partnership with CAMESA (Consortium for Advancing Monitoring for Ecosystem Sustainability in the Americas). The two year process of scientific and technical development of IMRENAT, Jalisco's natural resources inventory and monitoring project, ensued. Guidelines, technology, and procedures derived in the development phase shaped IMRENAT operational phase, up to the point of completion of the first of six regions.

Introduction

In 1966 the State Government of Jalisco conducted a review of the state's forest sector. A new forest agenda resulted from this review, which led to a set of ground breaking actions creating a long term forest development program known as FIPRODEFO (Trust Fund for the Administration of the Forest Development Program of Jalisco). Among the relevant issues, the survey revealed the need to reclaim damaged forest land, strengthen silviculture programs for natural temperate forests, support commercial plantation efforts, update and improve forest industry infrastructure, and improve information gathering and dissemination in support of policy planning. Solving these problems became the agenda for FIPRODEFO.

FIPRODEFO relies on Consejo Agropecuario de Jalisco A.C. (CAJ, The Farming Council of Jalisco), to operate development projects. CAJ is an advisory board to Jalisco's governor, and it is made up of landowners, industry representatives, and public agencies. Through the leadership of CAJ, FIPRODEFO has been able to undertake commercial plantation projects, technical

cooperation agreements, and other activities in favor of innovation in the state's forest sector.

Guiding principles in FIPRODEFO's activities include clear and open checks and balances of fund appropriations, no nonsense responsive decision making, and efficiency. FIPRODEFO's outsourcing policy permits state wide allocation of opportunities for local contractors, taking advantage of an ample base of talented professionals.

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institutions including Colorado State University, USDA FS Forest Inventory and Analysis, Environment Canada, and the Mexican Institute for Forest, Agriculture and Animal Science Research (INIFAP).

IMRENAT began as an exercise to translate into measurable goals a set of general principles about seamless integration of multiple scale and multiple resolution levels of inventorying and monitoring of natural resources. Goals were then used in designing a scheme for sampling specific variables in the field, and modeling imagery information. A pilot area was selected to test a number of variants in sampling and measuring schemes. This area was conveniently close to the capital city of Guadalajara. At the same time this region encompasses a wide array of vegetation cover types, and offers numerous challenges to field crews, from an enormous biodiversity, up to terrain so rough as to present frequent cases of unreachable sample sites. In the near future, experiences gained in the pilot area will permit a large scale field sampling of the rest of the state. Afterwards, a monitoring survey will provide updated figures every 5 years, if 20 percent of the state area were remeasured annually.

An Agenda Fit for IMRENAT

FIPRODEFO first became interested in IMRENAT when a complaint by Jalisco's wood industries about scarce lumber in the local market was being blamed for increased imports from other regions and from abroad, and that were still insufficient to dampen illegal timber harvesting. A review of past inventory data supported the idea that standing stock in Jalisco's forestlands declined over the medium range, but this idea conflicted with the latest national forest inventory data. The 2000 inventory reported net timber increment three times the harvest rate. A careful examination stumbled into a confusing set of technical complications. A new forest inventory was then seen not only as a check up on previously available data, but an urgent development opportunity to create a monitoring system that will try, once and for all, to provide a coherent stream of forest statistics for medium and long term planning purposes.

Fragmentation was one of the noise factors in estimating deforestation rates, one of the politically important figures that forest inventories are expected to yield. Facing this problem led to the use of new conceptual frameworks about borderless interpretation of landscapes. This idea changes the way that remote sensing images are interpreted. Under the new concept, the basic land unit will be as small as the image pixel. Interpreting pixels cannot be done as before, by expert opinion, but it can be done mechanically by using spatial modeling.

In this scheme, land classification will be one spatial modeling application.

The fact that IMRENAT was born as a seamless multiple scales and resolutions monitoring technology further increased its potential utility to address FIPRODEFO's agenda. Now, the new tools will be useful in addressing interactions between land uses, environment, and long term cumulative regional effects.

The Mexican government, like other governments in the world is interested in integrated operation of all public programs that deal with a specific thematic area. In this process, FIPRODEFO has been mandated to coordinate actions and views with other institutions dealing with rural matters. The general attitude to land development in rural institutions demanded from FIPRODEFO reconsidering its list of forest policy issues, and move them away from managing timberlands, to address forest-non forest processes such as deforestation, fragmentation, land development, agroforestry activities, and other interface opportunities and conflicts. Facts are one means to talk between agencies and FIPRODEFO, and IMRENAT is an ideal way to do this.

IMRENAT Features

From FIPRODEFO's point of view, IMRENAT is one more activity that eventually should be handed away to institutions or firms in the forestry sector of Jalisco. This policy follows the general principle that FIPRODEFO is a promoter of innovation who provides seed money and carries out the development phase of new ideas, techniques and programs.

Another FIPRODEFO policy is to hire field crews among foresters and technicians from the study region. This policy reduces costs and makes FIPRODEFO an organization that can quickly change and respond to needs and opportunities, but the real reason for outsourcing is to train and induce interest among state foresters in the new concepts, techniques, and tools. The more the inner workings of IMRENAT are known, the more likely it is that foresters will be inclined to use them and suggest others how to take full advantage of IMRENAT resources and availability. This policy contrasts with traditional national forest inventories. The latter ones have been conducted by specialists and reclusive organizations whose only output is a set of statistics and maps, but little idea on what those items can be used for.

Users have previously experienced disappointing reliability of forest inventory outputs, despite considerable efforts and expense invested in them. One specific reason for the poor performance of past inventories is the fact that their design was optimized to answer national level

inquires, but lack depth and detail to describe local variations, issues, causal connections, and other important information with local and specific focus. IMRENAT is not fit to fully respond to these demands and quality requirements, but its performance is expected to excel in ways that will be evident because its design is guided to describe and explain dynamic processes, and to make connections between disparate factors, locations, and time frames.

Knowledge Partnerships, a Practical Exercise

Although it is natural to seek collaboration and resource sharing to improve the work in innovative projects, partnerships also offer other important benefits. User feedback, faster adoption of new ideas, credibility and better linkage between program outputs and how they are used are the major reasons to foster close relations with the institutions and organizations involved in land management.

Bringing together a wide array of stakeholders into the planning, realization and usage phases of inventory and monitoring projects such as IMRENAT is a matter of great importance beyond their immediate roles played and resources shared. As important as the technology and science, the political support can be harnessed in favor of completing the project, and enthusiasm can be enticed in otherwise reluctant users.

These are the reasons behind the considerable effort in IMRENAT to foster a creative environment of collaboration with a varied number of partners. Some of these associations are with academic institutions that offer technical support and scientific credibility. INIFAP has been instrumental in IMRENAT, both as institution and as a group of talented specialists committed to give IMRENAT the best counseling. Government institutions such as CAJ have given a considerable leverage and political clout that provides ample public exposure to IMRENAT outputs. CAMESA and the US Forest Service have brought international visibility and institutional strength to the project. An improved communication is necessary with other institutions like INEGI (the Mexican Institute of Geography, Statistics and Informatics), in the future, when numerous applications will demand the benefit of adding information layers from other sources beyond those measured directly by IMRENAT.

In short, FIPRODEFO has taken IMRENAT as a high priority project that will offer reliable information in a sustained manner. This information stream has been designed from start to be specific to Jalisco's forest, natural resources and land management issues and concerns, and at the same time, monitoring has been designed in a way to be flexible and responsive to evolving situations. The seamless nature in IMRENAT is particularly suitable to understand and keep tabs on interactions between natural and developed environments. These interphase relations between land uses and ecological processes have interconnections that are better handled by tools as those in IMRENAT.