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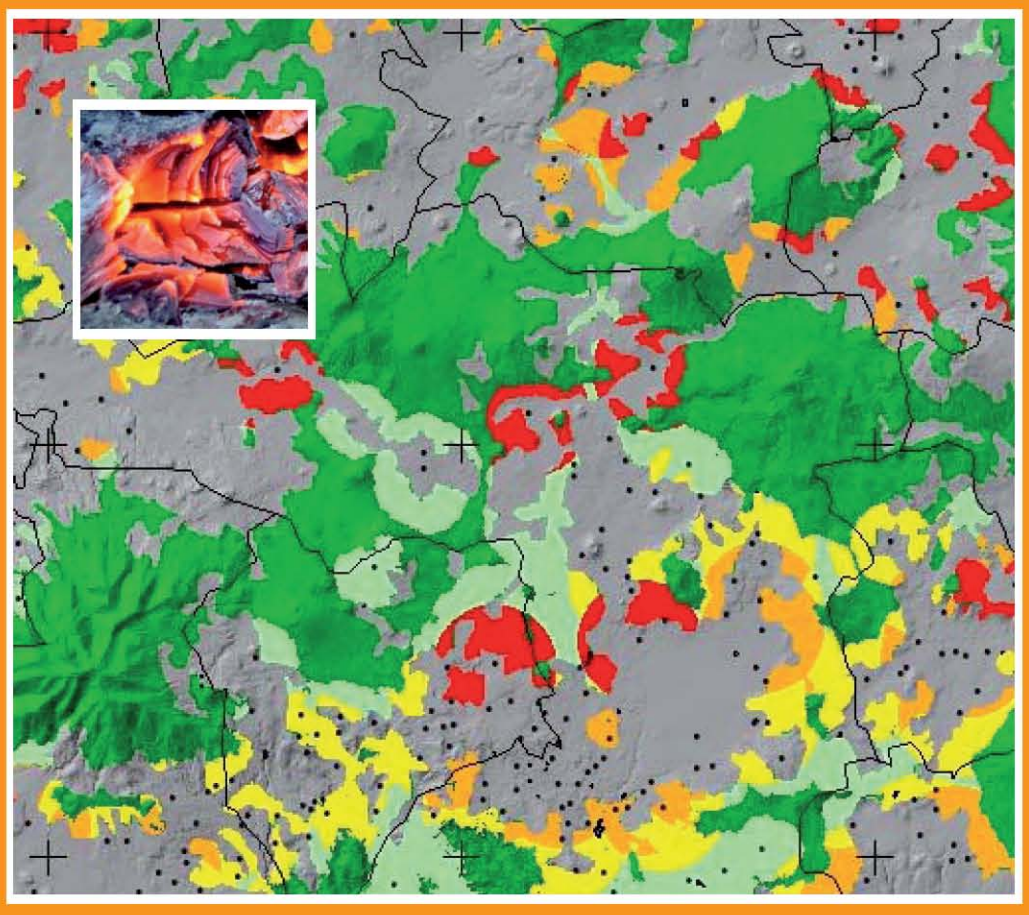
A CASE STUDY USING WISDOM

Woodfuel Integrated Supply-Demand Overview Mapping



FAO Wood Energy Programme

Universidad Nacional Autonoma de Mexico - UNAM
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FUELWOOD "HOT SPOTS" IN MEXICO:

A CASE STUDY USING WISDOM – Woodfuel Integrated Supply-Demand Overview Mapping

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Foreword

A more sustainable use of woodfuels will have a positive impact on the environment and on sustainable forest management and will produce social and economic benefits such as income and employment opportunities to decentralized communities. To this end, the Wood Energy Programme of FAO is broadening and disseminating knowledge and information on wood energy aspects and actively collaborating with member countries in the development and implementation of planning tools supporting wood energy planning and policy formulation.

The most critical limitation in the formulation of wood energy policies commonly pointed out is the lack of reliable information on woodfuel production and consumption, but this is a somewhat misleading perception. The information is poor and contradictory, no doubt, but this is more often the result than the cause of the absence of sectoral policies. In most cases, the problem is not lack of reliable data per se but rather the lack of clear institutional responsibilities and of a comprehensive analytical perspective, which prevents the proper use of the information that exists in the forestry and energy agencies of most countries.

FAO, under the request of the Govermnment of Mexico, funded the project "Wood energy for rural development" (TCP/MEX/4553) which provided a detailed analysis of the wood energy situation in Mexico. As a follow up of this project and in order to promote the adoption of a comprehensive analytical perspective and thus to favor the definition of institutional responsibilities, the Wood Energy Programme of FAO and the Center for Ecosystems Research of the National University of Mexico developed the Woodfuel Integrated Supply / Demand Overview Mapping (WISDOM), a spatially-explicit method for assessing woodfuel sustainability and supporting wood energy planning through the integration and analysis of existing demand- and supply-related information.

In the Mexico study here presented, the analysis was conducted at two different scales: at national scale, in which it allowed the definition of priority areas or fuelwood "hot spots", and at sub-national scale in the "Purhepecha" Region (one of the priority regions), where it allowed the definition of different pressure zones according to accessibility aspects. In this multi-scale analysis WISDOM expressed its potential as national strategic planning tool as well as operational tool for sub-national planning.

The results of the Mexico study - in terms of the identification of priority areas or fuelwood "hot spots"- have been incorporated by the National Forestry Commission, which plans to launch a program of efficient woodburning cookstoves and multi-purpose energy plantations directed to those areas.

In addition to the Mexico case, the WISDOM approach has been so far implemented in Senegal and Slovenia. Confronted with very diverse contexts, WISDOM has proved to be flexible and adaptable, always able to consolidate fragmented knowledge and to produce clear perceptions of woodfuel production/consumption patterns. It is interesting to note that the priorities identified in the three cases are very different. In Mexico the critical aspect is the sustainability and access of fuelwood supply sources in specific users' contexts (fuelwood "hot spots"); in Senegal the main issue is the trend in charcoal consumption in rural villages. Finally, in Slovenia the definition of biomass resources available for energy purposes and the socioeconomic constraints that limit the access to such resources are the most relevant aspects. In each case, the analysis was based on the integration of information already existing in the countries, which shows also the cost-efficiency of the WISDOM approach.

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Summary

Adequately understanding the environmental and socio-economic implications of the current patterns of woodfuels production and use and their resource potentials is a critical task for promoting the sustainability of these energy sources. The inherent site specificity of woodfuel situations challenges conventional energy planning methods based on aggregate information, and require to coherently and efficiently articulate the local heterogeneity into the national or regional level. Multi-scale spatially-explicit approaches have much to offer for achieving this latter task.

This study uses the Woodfuel Integrated Supply/Demand Overview Mapping (WISDOM) methodology to identify woodfuel priority areas or household fuelwood "hot spots" in Mexico. WISDOM is a spatially-explicit method oriented to support strategic planning and policy formulation through the integration and analysis of existing demand and supply related information and indicators. In the present report, Mexican *municipios* (first sub-state administrative unit) are categorized into five priority groups. Further analysis at a higher resolution is conducted using accessibility to forests and fuelwood user's densities, over the Purhepecha Region of Michoacan State to preliminary identify concrete areas for project implementation.

The WISDOM analysis confirmed the high heterogeneity of fuelwood situations within Mexico, allowing the identification of 262 high-priority *municipios*, out of a country total of 2,401. *Municipios* were ranked based on the number of fuelwood users; the percentage of households that use fuelwood; the density and growth of fuelwood users; the resilience of fuelwood consumption, and the magnitude of woodfuel forest resources.

The spatially-explicit accessibility analysis conducted over the Purhepecha Region shows that 40% of the forest area is actually accessible to fuelwood gatherers at one hour distance (round trip) from their homes. This portion rises to 80% when considering a walking round trip of two hours. Approximately 13% of the accessible forests are estimated to suffer the highest pressure from fuelwood harvesting due to their proximity to more populous settlements.

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Acknowledgments

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It was drafted by Omar R. Masera, Professor of Energy and the Environment at the Centre for Ecosystems Research of UNAM, Gabriela Guerrero and Adrián Ghilardi, Research Assistants at the Centre for Ecosystems Research of UNAM, Alejandro Velázquez and Jean Francois Mas, Professors at the Institute of Geography, UNAM, María de Jesús Ordóñez, Associate Professor at the Regional Center for Multidisciplinary Research, and Rudi Drigo, Consultant with the wood energy component of the "Sustainable Forest Management Programme in African ACP Countries" Project of the FAO-EC Partnership Programme. Miguel Trossero, Senior Forestry Officer responsible of FAO Wood Energy Programme, provided technical advise and supported in various ways the initiative, including the publication of the present document.

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