analyses are sensitive to the assumptions about time horizon of the analysis, ecosystem conditions and dynamics, discount factors applied to future carbon benefits, and displacement factors in calculations of substitution benefits. Contributions to a global climate mitigation portfolio at competitive economic costs and with many ecological, social ,and environmental benefits can be achieved through large-scale afforestation, avoidance of deforestation and degradation, sustainable forest management, forest conservation, and the responsible use of wood products. Criteria to identify the type, scale, and location of activities with the greatest climate mitigation benefits are under development. These should include the impacts of changing climate on the forest sector and address interactions with adaptation strategies.

The global carbon footprint of the forest products industry. Miner, R.A. *(NCASI, USA; rminer@ncasi.org).*

NCASI recently completed a study, commissioned by the United Nations Food and Agriculture Organization (FAO), with support from the International Council of Forest and Paper Associations, of the impacts of the global forest products industry on atmospheric greenhouse gases. Based on data from developed countries, which together account for over one-half of industrial roundwood production, the study found that sustainable forest management practices are capable of maintaining carbon stocks in production forests. The data available at the global scale, however, were inadequate to determine global trends in carbon stocks in forests that produce wood for the industry. The amounts of carbon stored in forest products for extended periods are large enough to offset almost one-half of the industry's value chain emissions. The most significant emission sources in the value chain are attributable to fossil fuels used in manufacturing and methane emissions from forest products in landfills. Reductions in societal greenhouse gas emissions are associated with the use of wood-based building materials, the burning of used products as fuel at the end-of-life, and the development of additional supplies of sustainably produced forest biomass for use in applications that displace fossil fuels and greenhouse-gas intensive products.

Greenhouse gas dynamics of different forest management and wood use scenarios in Switzerland. Thürig, E. *(Swiss Federal Research Institute WSL, Switzerland; esther.thuerig@wsl.ch)*, Werner, F. *(Dr. Werner Environment and Development, Switzerland; frank@frankwerner.ch)*, Taverna, R., Hofer, P. *(GEO Partner AG, Switzerland; taverna@geopartner.ch; hofer@geopartner.ch)*, Kaufmann, E. *(Swiss Federal Research Institute WSL, Switzerland; edgar.kaufmann@wsl.ch)*

Adequate management of forests and an increased use of wood products help in mitigating climate change. However, response time to management actions in forestry are usually long and may build a conflict between carbon sink in forests and the use of wood as substitute material and energy. Therefore, an integral long-term strategic approach is required to formulate the most effective forest and wood management strategies for mitigating the increase of atmospheric greenhouse gases (GHG). We present an integral model-based approach to evaluate the GHG impacts of various forest management and wood use scenarios on a national basis, including trade-offs among the different strategies and country-specific import/export flows of wood products. On the basis of our models, the following recommendations are proposed to advance the contributions of the forestry and timber sector for mitigating climate change: (1) a maximum possible, sustainable increment should be aimed for in the forest; (2) this increment should be continuously harvested; (3) the harvested wood should be processed in accordance with the principle of cascade use, i.e., first be used as a material as long as possible; and (4) waste wood that is not suitable for further use should be used to generate energy.

SP-3 Conservation and sustainable use of forest genetic resources

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Identification of critical problems in forest genetic resources conservation and sustainable use: a global assessment. Bennadji, Z. *(INIA, Uruguay; zbennadji@tb.inia.org.uy)*, Souvannavong, O. *(FAO, Italy; Oudara.Souvannavong@fao.org).*

The present works aims to identify, at global level, the main critical problems existing in forest genetic resources (FGR) conservation and sustainable use. Based on the FAO forest knowledge repository and its FGR Internet database, REFORGEN, a comparative study among and between regions (Africa, Asia, Europe, North America, and South America) was conducted. Data were collated from 70 national reports, 5 regional syntheses, the REFORGEN database, and the results of 5 sub-regional workshops. The time scale considered was 2000–2009. A comparative matrix of advances and needs was established, allowing a gap analysis and the identification of critical existing problems. An external focused bibliographical review was used as a triangulation tool for data analysis back up and interpretation of findings. Main problems identified at the global level were: (i) need for standardization of forest species priority setting and genetic diversity indicators, (ii) lack of strong mechanisms for science and technology findings exchanges at all level, and (iii) weakness of the interface between policy and science. The results will be use as a baseline for the elaboration of the first FAO report on the state of the world's FGR, and as input to establish action plans for different country and regional contexts.

Sustainable utilization and conservation of forest genetic resources through tree breeding and seed orchard management in Korea. Kang, K.S. *(Korea Forest Research Institute, Republic of Korea; kangks@forest.go.kr)*, Hyun, J.O. *(Seoul National University, Republic of Korea; junghyun@snu.ac.kr)*, Baik, E.S. *(Korea Forest Research Institute, Republic of Korea; 5491bkes@forest.go.kr).*

Research on forest genetic resource is essential concerning the impact of climate change. Selection of well-adapted and adaptive provenances is necessary so that vital and stable forests can be cultivated for the future. A general concept for conservation and utilization of forest genetic resources has existed in Korea since 1956 when the tree breeding program was initiated. Both *in-situ*