

## **FAO's Work in Sustainable Mountain Development and Watershed Management—A 2017 Update**

Authors: Manuelli, Sara, Hofer, Thomas, and Springgay, Elaine

Source: Mountain Research and Development, 37(2) : 224-227

Published By: International Mountain Society

URL: <https://doi.org/10.1659/MRD-JOURNAL-D-17-00043.1>

---

BioOne Complete ([complete.BioOne.org](https://complete.BioOne.org)) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/terms-of-use](https://www.bioone.org/terms-of-use).

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

---

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

# FAO's Work in Sustainable Mountain Development and Watershed Management—A 2017 Update



*The adoption of the 2030 Agenda for Sustainable Development and the Paris Agreement of the United Nations Framework Convention on Climate Change has propelled the effective implementation of sustainable mountain development. The 2030 Agenda recognizes that livelihoods and natural resources cannot be addressed separately. Investing in the sustainable development of mountain communities and ecosystem conservation will provide benefits for humanity as a whole. Since its appointment as task manager for Chapter 13 of Agenda 21 in 1992, the Food and Agriculture Organization of the United Nations (FAO) has worked for sustainable mountain development and has thus contributed to increasing global awareness of the importance of mountain ecosystems and the plight of mountain peoples.*

## FAO's achievements in sustainable mountain development

The Food and Agriculture Organization of the United Nations (FAO) served as the United Nations' lead agency for the International Year of Mountains in 2002 and continues to coordinate annual International Mountain Day (11 December) celebrations and host the Mountain Partnership Secretariat, which brings members together to advocate for mountains on international agendas, promote joint projects, share knowledge, and strengthen capacity. Every 3 years, FAO prepares the secretary-general's report to the General Assembly of the United Nations (UN), which describes the status and progress of sustainable mountain development at national and international levels and provides suggestions for consideration by the assembly. Since its last MountainPlatform Statement in 2015

(Manuelli et al 2015), FAO has achieved significant progress.

The Water and Mountains Team of the FAO Forestry Department develops, implements, and promotes integrated landscape management and the sustainable development of upland areas to address water and food security issues, as well as to promote climate change resilience. With an emphasis on improving livelihoods, the team provides technical expertise on the topics of forest–water interactions, watershed management, and sustainable mountain development, as well as promoting and facilitating projects, processes, and policies. Currently, the Water and Mountains Team is implementing several projects in mountain regions in Ecuador, Guatemala, Iran, Morocco, and West Africa.

## The new Forest and Water Programme

Approximately 75% of freshwater comes from forested watersheds (Shvidenko et al 2005), providing water for domestic, agricultural, industrial, and environmental uses downstream. Many of these watersheds are headwater catchments in mountain areas, and thus mountains are often referred to as “water towers,” supplying freshwater to over 50% of the world's population (Ariza et al 2013). After launching *Forests and Water—A Five-Year Action Plan* (FAO, 2015a) in September 2015 at the 14th World Forestry Congress in Durban, South Africa, FAO announced a Forest and Water Programme during the International Day of Forests (21 March 2016). The program is committed to advancing an integrated approach to forest and water resources management and is aligned with the goals of the Action Plan, as well as Sustainable

Development Goals (SDGs) 6 (water) and 15 (life on land). It strives to enhance the strategic management of forests and trees within landscapes for water-related ecosystem services, emphasizing the importance of upstream–downstream linkages. In doing so, the program supports countries in achieving the 2 mountain-related SDGs.

The Forest and Water Programme currently has 3 priorities: the development of a forest and water monitoring framework to support the collection of data to inform policy and practice (Box 1; Figure 1); capacity building of stakeholders to take into account water-related ecosystem services in forest and land management; and advocacy. Over the next 2 years, the program will pilot the monitoring framework and capacity-building activities and develop an interactive monitoring tool; stakeholders are invited to express interest in engagement as technical experts or potential beneficiaries.

## Working Party on the Management of Mountain Watersheds

FAO also hosts the Secretariat of the Working Party on the Management of Mountain Watersheds, a technical body under the European Forestry Commission. The Working Party and FAO have published *Ecosystem Services in Headwater Catchments* (Krecek et al 2017), which aims to improve the understanding of mountain ecosystem services in a changing world and to promote inclusive stakeholder dialogue in headwater regions. The annual steering committee meeting is scheduled to take place in May 2017, and the next biennial session of the Working Party, with a focus on the management of

### BOX 1: Forest and water monitoring framework

Still under development, the proposed monitoring framework includes a set of indicators addressing:

- The status of water supply (quantity and timing) within and from forested areas in comparison to reference conditions;
- The status of water quality within and from forested areas in comparison with reference conditions;
- The effectiveness of forests' provision of water-related ecosystem services (eg flood and soil erosion control, cloud cover and precipitation, and aquatic biodiversity);
- The effectiveness of integrated forest and water approaches in practice;
- The effectiveness of legal, institutional, and economic frameworks' recognition and implementation of integrated forest and water approaches;
- The effectiveness of sustainable forest management of water-related ecosystem services in the provision of socioeconomic benefits.

municipal watersheds in mountain regions, is set for 4–6 September 2017 in Prague, Czech Republic.

### The Mountain Partnership

The Mountain Partnership (MP) is a UN voluntary alliance of governments, intergovernmental organizations, and civil society organizations dedicated to improving the lives of mountain peoples and protecting mountain environments around the world. Founded in 2002 during the World Summit on Sustainable Development in Johannesburg, South Africa, the MP has steadily grown and, as of March 2017, has more than 290 members.

The Mountain Partnership Secretariat (MPS) was established to support and serve the MP members and raise the mountain agenda worldwide; work consists primarily of advocacy, communications, capacity development, and brokering joint activities between MP members. Currently, the MPS is financed by the Italian Ministry of Foreign Affairs, the Swiss Federal Office for Agriculture, and FAO.

In September 2015, the UN adopted the 2030 Agenda for Sustainable Development, which included 3 SDG targets related to mountains: targets 6.6, 15.1, and 15.4

(1 on water and 2 on life on land).

This was the result of an intense advocacy campaign carried out by MP members over 2 years, involving strategic events and meetings to create political support for including specific language on mountains in the SDGs. As the appointed custodian agency of target 15.4, the MPS/FAO has developed the official indicator

for monitoring progress toward the achievement of this target (Box 2).

In December 2015, on International Mountain Day, FAO released the report *Mapping the Vulnerability of Mountain Peoples to Food Insecurity* (FAO 2015b). The only comprehensive global overview on the subject in over a decade, the report highlighted the rising level of food insecurity in the world's mountain regions (Box 3). Throughout 2016, the MPS widely disseminated the results of the study at events in Rome, Italy; Washington, DC; and New York, NY.

As part of a project supported by the Italian Development Cooperation, the MPS, in collaboration with Slow Food, is promoting more sustainable value chains for selected high-quality mountain products. A voluntary label for these mountain products (Figure 2) has been developed to improve access to markets for small mountain producers in developing countries. The label enables consumers to identify products from mountain areas and allows producers to obtain fair compensation for their products.

**FIGURE 1** Experts brainstorm to develop indicators for forest–water relationships during an FAO workshop at the Stockholm International Water Institute in Sweden. (Photo courtesy of Stockholm International Water Institute/Nayereh Rajabi)





### BOX 2: Monitoring progress toward a major mountain-related SDG target

The *Mountain Green Cover Index* is the official indicator for monitoring progress toward SDG target 15.4, which states, “By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.” It is designed to measure changes in the vegetation in mountain areas. It builds on a direct correlation between the green coverage of mountain areas and their state of health and capacity to provide ecosystem services. In particular, it provides information on tree and shrub cover. A reduction in green cover is generally linked to timber extraction, fuelwood collection, and fire. An increase is due to vegetation growth and possibly linked to reforestation or afforestation.

It is being piloted in Bolivia, Cuba, India, and Kyrgyzstan. The Swiss Federal Office for Agriculture is contributing to the project by

FIGURE 2 Mountain Partnership Products labels. (Photo courtesy of FAO/Alessia Vita)



sponsoring an associate program officer for 2 years.

Every year since 2008, the MPS has trained midlevel government and nongovernmental organization staff to better understand different sustainable mountain development issues through the International Programme on Research and Training on Sustainable Management of Mountain Areas, commonly referred to as IPROMO. The program will celebrate its 10th anniversary in July 2017.

### Outlook

FAO's work is driven by 5 crosscutting strategic objectives, and the work in sustainable mountain development, watershed management, and forests and water follows this integrated approach (FAO 2013). The 2030 Agenda provides an opportunity for FAO to scale up attention to mountain ecosystems and livelihoods and ensure that no one is left behind. In the context of this renewed impetus, in 2017, the MP will organize a global meeting on mountains to discuss how to better include mountains in the current development framework and to provide a plan of action.

### BOX 3: Mapping the vulnerability of mountain people to food insecurity

This study presents an updated geographic and demographic picture of the world's mountain areas and assesses the vulnerability of mountain dwellers in developing countries to food insecurity, based on a specially designed model. According to the study, 1 in 3 mountain people in developing countries is at risk of hunger and malnutrition.

The key facts and figures from the study are as follows:

- 32 million km<sup>2</sup>, or 22%, of Earth's land surface is covered by mountains.
- 915 million people, or 13% of the global population, live in the mountains.
- 39% of mountain people in developing countries, or 329 million people, are vulnerable to food insecurity.
- From 2000 to 2012, the number of people vulnerable to food insecurity in the mountains increased by 30%.
- During the same period, the total mountain population in developing countries increased by 16%.

### REFERENCES

- Ariza C, Maselli D, Kohler T. 2013. *Mountains: Our Life, Our Future. Progress and Perspectives on Sustainable Mountain Development From Rio 1992 to Rio 2012 and Beyond*. Bern, Switzerland: Swiss Agency for Development and Cooperation and Centre for Development and Environment.
- FAO [Food and Agriculture Organization of the United Nations]. 2013. *Our Priorities: The FAO Strategic Objectives*. Rome, Italy: FAO. <http://www.fao.org/docrep/018/mi317e/mi317e.pdf>; accessed on 24 March 2017.
- FAO [Food and Agriculture Organization of the United Nations]. 2015a. *Forests and Water—A Five-Year Action Plan*. Rome, Italy: FAO. <http://www.fao.org/3/a-be803e.pdf>; accessed on 30 March 2017.
- FAO [Food and Agriculture Organization of the United Nations]. 2015b. *Mapping the Vulnerability of Mountain Peoples to Food Insecurity*. Rome, Italy:

FAO. <http://www.fao.org/3/a-i5175e.pdf>; accessed on 1 March 2017.

**Krecek J, Haigh M, Hofer T, Kubin E, Promper K, editors.** 2017. *Ecosystem Services of Headwater Catchments*. New Delhi, India: Capital Publishing Company. <http://www.springer.com/it/book/9783319579450>; accessed on 10 April 2017.

**Manuelli S, Hofer T, Wolter P.** 2015. FAO's work in sustainable mountain development and watershed management—A 2015 update. *Mountain Research and Development* 35(3):299–304.

**Shvidenko A, Barber C, Persson R, coordinating lead authors.** 2005. Forest and woodland systems. In: Sarukhán J, Whyte A, editors. *Ecosystems and Human Well-Being*. Washington, DC: Island Press, pp 587–614. <http://www.millenniumassessment.org/documents/document.290.aspx.pdf>; accessed on 10 April 2017.

## LINKS

Mountain Partnership: [www.fao.org/mountain-partnership/en/](http://www.fao.org/mountain-partnership/en/)

International Mountain Day: [www.fao.org/international-mountain-day/en/](http://www.fao.org/international-mountain-day/en/)

Mountain and Watershed

Management: [www.fao.org/forestry/watershedmanagementandmountains/en/](http://www.fao.org/forestry/watershedmanagementandmountains/en/)

Forest and Water Programme: [www.fao.org/2/ForestsAndWater](http://www.fao.org/2/ForestsAndWater)

Working Party on the Management of Mountain Watersheds: [www.fao.org/forestry/37705/en/](http://www.fao.org/forestry/37705/en/)

## FURTHER READING

**Ellison D, Morris CE, Locatelli B, Sheil D, Cohen J, Murdiyaso D, Gutierrez V, van Noordwijk, M, Creed IF, Pokorny J, Gaveau D, Spracklen DV, Bargués Tobella A, et al.** 2017. Trees, forests and water: Cool insights for a hot world. *Global Environmental Change* 43:51–61. <http://www.sciencedirect.com/science/article/pii/S0959378017300134>; accessed on 2 March 2017.

**AO [Food and Agriculture Organization of the United Nations].** 2006. *The New Generation of*

*Watershed Management Programmes and Projects: A Resource Book for Practitioners and Local Decision-makers Based on the Findings and Recommendations of a FAO Review*. Rome, Italy: FAO. [www.fao.org/docrep/009/a0644e/a0644e00.htm](http://www.fao.org/docrep/009/a0644e/a0644e00.htm); accessed on 24 March 2017.

**FAO [Food and Agriculture Organization of the United Nations].** 2011. *Why Invest in Sustainable Mountain Development?* Rome, Italy: FAO. [www.fao.org/docrep/015/i2370e/i2370e.pdf](http://www.fao.org/docrep/015/i2370e/i2370e.pdf); accessed on 24 March 2017.

**FAO [Food and Agriculture Organization of the United Nations].** 2013. *Forests and Water: International Momentum and Action*. Rome, Italy: FAO. [www.fao.org/docrep/017/i3129e/i3129e.pdf](http://www.fao.org/docrep/017/i3129e/i3129e.pdf); accessed on 24 March 2017.

**FAO [Food and Agriculture Organization of the United Nations].** 2014. *Mountains and the Sustainable Development Goals—A Call for Action*. Rome, Italy: FAO. [www.fao.org/fileadmin/templates/mountain\\_partnership/doc/POLICY\\_BRIEFS/Mountains\\_and\\_the\\_Sustainable\\_Development\\_Goals\\_-\\_NY\\_-\\_8Jan.2014.pdf](http://www.fao.org/fileadmin/templates/mountain_partnership/doc/POLICY_BRIEFS/Mountains_and_the_Sustainable_Development_Goals_-_NY_-_8Jan.2014.pdf); accessed on 24 March 2017.

**FAO [Food and Agriculture Organization of the United Nations].** 2014. *Mountains as the Water Towers of the World: A Call for Action on the Sustainable Development Goals (SDGs)*. Rome, Italy: FAO. [www.fao.org/fileadmin/templates/mountain\\_partnership/doc/POLICY\\_BRIEFS/SDGs\\_and\\_mountains\\_water\\_EN.pdf](http://www.fao.org/fileadmin/templates/mountain_partnership/doc/POLICY_BRIEFS/SDGs_and_mountains_water_EN.pdf); accessed on 24 March 2017.

**FAO [Food and Agriculture Organization of the United Nations].** 2014. *Why Mountains Matter for Climate Change Adaptation and Disaster Risk Reduction—A Call for Action on the Sustainable Development Goals*. Rome, Italy: FAO. [www.fao.org/fileadmin/templates/mountain\\_partnership/doc/POLICY\\_BRIEFS/SDG\\_mountains\\_and\\_climate\\_change.pdf](http://www.fao.org/fileadmin/templates/mountain_partnership/doc/POLICY_BRIEFS/SDG_mountains_and_climate_change.pdf); accessed on 24 March 2017.

**FAO [Food and Agriculture Organization of the United Nations].** 2014. *Why Mountains Matter for Energy—A Call for Action on the Sustainable Development Goals*. Rome, Italy: FAO. [www.fao.org/fileadmin/templates/mountain\\_partnership/doc/POLICY\\_BRIEFS/SDGs\\_and\\_mountains\\_energy\\_en.pdf](http://www.fao.org/fileadmin/templates/mountain_partnership/doc/POLICY_BRIEFS/SDGs_and_mountains_energy_en.pdf); accessed on 24 March 2017.

**FAO [Food and Agriculture Organization of the United Nations].** 2014. *Why Mountains Matter for Forests and Biodiversity—A Call for Action on the Sustainable Development Goals*. Rome, Italy: FAO. [www.fao.org/fileadmin/templates/mountain\\_partnership/doc/POLICY\\_BRIEFS/SDGs\\_and\\_mountains\\_forests\\_and\\_biodiversity\\_en.pdf](http://www.fao.org/fileadmin/templates/mountain_partnership/doc/POLICY_BRIEFS/SDGs_and_mountains_forests_and_biodiversity_en.pdf); accessed on 24 March 2017.

**FAO [Food and Agriculture Organization of the United Nations].** 2015. *Understanding Mountain Soils: A Contribution From Mountain Areas to the International Year of Soils 2015*. Rome, Italy: FAO. <http://www.fao.org/3/a-i4704e.pdf>; accessed on 24 March 2017.

**FAO [Food and Agriculture Organization of the United Nations].** 2016. *Food and Agriculture: Key to Achieving the 2030 Agenda for Sustainable Development*. Rome, Italy: FAO. <http://www.fao.org/3/a-i5499e.pdf>; accessed on 2 March 2017.

**Kohler T, Wehrli A, Jurek M, editors.** 2014. *Mountains and Climate Change: A Global Concern*. Sustainable Mountain Development Series. Bern, Switzerland: Centre for Development and Environment (CDE), Swiss Agency for Development and Cooperation (SDC), and Geographica Bernensia. [www.fao.org/fileadmin/user\\_upload/mountain\\_partnership/docs/E\\_LOW\\_Fullversion\\_Mountain\\_CC.pdf](http://www.fao.org/fileadmin/user_upload/mountain_partnership/docs/E_LOW_Fullversion_Mountain_CC.pdf); accessed on 24 March 2017; Spanish link: [www.fao.org/fileadmin/user\\_upload/mountain\\_partnership/docs/SP\\_LOW\\_fullversion\\_Mountain\\_CC.pdf](http://www.fao.org/fileadmin/user_upload/mountain_partnership/docs/SP_LOW_fullversion_Mountain_CC.pdf); accessed on 24 March 2017.

**Manuelli S, Hofer T, Vita A.** 2014. FAO's work on sustainable mountain development and watershed management. *Mountain Research and Development* 34(1):66–70.

**Wymann von Dach S, Romeo R, Vita A, Wurzingler M, Kohler T, editors.** 2013. *Mountain Farming Is Family Farming: A Contribution From Mountain Areas to the International Year of Family Farming 2014*. Rome, Italy: FAO, CDE, BOKU. <http://www.fao.org/docrep/019/i3480e/i3480e.pdf>; accessed on 29 June 2015; Spanish link: [www.fao.org/3/a-i3480s.pdf](http://www.fao.org/3/a-i3480s.pdf); accessed on 24 March 2017.

## AUTHORS

**Sara Manuelli\*, Thomas Hofer, and Elaine Springgay**

\* Corresponding author: [Sara.Manuelli@fao.org](mailto:Sara.Manuelli@fao.org)

Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, 00153 Rome, Italy

© 2017 Manuelli et al. This open access article is licensed under a Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>). Please credit the authors and the full source.