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Source: Mountain Research and Development, 32(S1)

Published By: International Mountain Society

URL: <https://doi.org/10.1659/MRD-JOURNAL-D-11-00120.S1>

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Promoting Sustainable Mountain Development at the Global Level

The Swiss Development Cooperation's Involvement

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Sustainable Mountain Development (SMD) in the context of global warming, world population growth, increased water and energy consumption, persisting food insecurity and biodiversity loss, more frequent and intense natural calamities, and the depletion of vital natural resources is a key concern for humanity. It requires the attention and support of many stakeholders and shareholders, including development agencies. The Swiss Agency for Development and Cooperation has been a major promoter of SMD at the global policy and networking level. By supporting the Perth mountain conferences, it has also emphasized the role of research for SMD. With Rio 2012 fast approaching, it is important to understand past efforts to design what new support is needed for ensuring that SMD takes place effectively.

Keywords: Sustainable mountain development; global change; support; policy.

Reviewed by the Editors:
December 2011

Accepted: December 2011

Historical background

In 1992, at the United Nations Conference on Environment and Development, commonly referred to as "Rio 1992" or "the Rio Earth Summit," mountains received unexpected high political attention thanks to the targeted support provided by highly committed representatives from research,

practice, and policy (Messerli 2012; in this issue). Mountains were recognized in Chapter 13 in *Agenda 21* (United Nations 1992) as fragile ecosystems that matter for humankind. In this process, Switzerland and, in particular, the Swiss Agency for Development and Cooperation (SDC) were instrumental. As a consequence, SDC has been supporting a variety of initiatives that promote sustainable mountain development (SMD) at the global level, particularly by funding the Mountain Forum network and cosponsoring the Mountain Partnership Initiative established at the World Summit on Sustainable Development in Johannesburg in 2002; 2002 also was the International Year of Mountains, similarly supported by SDC. For both networking initiatives, SDC's emphasis has been on creating and funding hubs in relevant partner regions such as in the Hindu Kush-Himalaya (hosted by the International Centre for Integrated Mountain Development), the Andes (hosted by the Consorcio para el Desarrollo Sostenible de la Ecorregión Andina), and, more recently, Central Asia (hosted by the University of Central Asia) to strengthen the active involvement of partner countries at the global level.

Research for sustainable mountain development

In development cooperation, the growing complexity of issues related to the world's development in general and the need to make effective use of limited resources

require informed decision-making and strategic orientation. In this context, research for development plays a central role to improve the understanding of issues and challenges as well as to provide convincing data for evidence-based decision-making at various policy levels. It is with this understanding and as a reaction to the imbalance of the research capacity between industrialized and developing countries flagged during Rio 1992 that SDC has supported novel initiatives, such as the creation of the Swiss Commission for Research Partnerships (KFPE). Similarly, SDC has provided regular support to international scientific events with the aim of enhancing knowledge on mountain systems and livelihoods. The World Mountain Symposium in 2001 in Interlaken, on Community Development between Subsidy, Subsidiarity and Sustainability (Berger et al 2002), as well as the global conferences in 2005 (Price 2006) and 2010 in Perth, Scotland, described in other articles in this publication, gathered researchers from all over the world to discuss progress in research on SMD in the context of global change. These initiatives have contributed considerably to the generation of knowledge for SMD worldwide.

Moreover, over the past 3 years, SDC has undertaken efforts to promote global awareness regarding the pivotal role of mountains, their ecosystems, and people based on the state-of-the-art in science. This has been done, in particular, through a series of brochures linked to topics

TABLE 1 Mountain reports commissioned by the Swiss Agency for Development and Cooperation and partners in preparation for the Rio+20 conference on sustainable development in 2012 and discussed at the Lucerne World Mountain Conference in October 2011.

Coordinating institutions	Draft regional and global reports
ARE	On mountains in the Alps (Ref. Price et al 2011) ^{a)}
CONDESAN	On mountains in the Andes (Ref. CONDESAN 2011) ^{b)} On mountains in Mesoamerica (Ref. Chassot et al 2011) ^{b)}
ICIMOD	On mountains in the Hindu Kush–Himalaya (Ref. ICIMOD 2011a) ^{b)} On mountains in the South East Asia and Pacific region (Ref. ICIMOD 2011b) ^{b)}
SDC and CDE	Global report on Institutional Framework and Green Economy (Kohler and Maselli 2011) ^{b)} Synthesis Report compiled from all reports (Maselli et al 2011) ^{b)}
SQU	On mountains in the Middle East and North Africa (Ref. Victor 2011) ^{a)}
UCA and Zoï Environment Network	On mountains in Central Asia (Ref. UCA and Zoï Environment Network 2011) ^{b)}
UNEP	On mountains in Africa (Ref. UNEP 2011a) ^{b)} On mountains in Eastern and South-Eastern Europe (Ref. UNEP 2011b) ^{c)}

ARE, Swiss Federal Office for Spatial Development; CONDESAN, Consorcio para el Desarrollo Sostenible de la Ecoregión Andina; ICIMOD, International Centre for Integrated Mountain Development; CDE, Centre for Development and Environment; SQU, Sultan Qaboos University; UCA, University of Central Asia; UNEP, United Nations Environment Program.

^{a)}Commissioned by ARE (Switzerland).

^{b)}Commissioned by SDC.

^{c)}Commissioned by UNEP.

addressed by major international events and meetings such as, in particular, the Conferences of Parties: *Mountains and Climate Change—From Understanding to Action* (Kohler and Maselli 2009), *Mountain Biodiversity and Global Change* (Spehn et al 2010), *Highlands and Drylands—Mountains, a Source of Resilience in Arid Regions* (FAO 2011), and *Mountain Forests in a Changing World—Realizing Values, Addressing Challenges* (Price et al 2011).

Assessing progress and learning from experience

Since 1992, a wide range of efforts by different actors have been undertaken to promote SMD (Messerli 2012). Some of them relate to the above events; others just emerged on their own. However, in view of the forthcoming United Nations Conference on Sustainable Development “Rio +20” in 2012, it seems relevant to assess and understand what has been achieved. It appears equally important to learn from successful experiences and draw lessons for more effective interventions in the future. Anticipating possible future

challenges or opportunities may further help to be better prepared for their management, which will certainly encompass adaptation to, and the mitigation of, climate change as the mainstream concern of the past decade and, probably, the new mainstream paradigm of Green Economy. But, as in the past, major unexpected and unpredictable political, social, economic, or even technological changes and innovations may overshadow any of these mainstream concerns.

In this sense, the SDC commissioned a number of regional reports to assess achievements and progress in the major mountain regions of the world (Table 1). In addition, a global report and a synthesis report were compiled to explore the experience and future potential of improved institutional framework conditions from the local to global levels as well as of a Green (or greener) Economy to support more effective SMD. The insights gained through these assessments, in which key local, regional, and global actors were actively involved, are meant to feed into a range of international policy processes such as the United Nations (UN) secretary

general's High Level Panel on Global Sustainability (commonly referred to as GSP), the preparation of the Rio 2012 conference, and possibly the next cycle of the Commission for Sustainable Development or its possible successor structure. All people and institutions that have been involved in preparing these materials are convinced that mountains and their inhabitants play key roles in achieving a sustainable global future and that mountain people and ecosystems have to be actively involved and considered in shaping the future development of our globe.

By and large, since 1992 mountain regions, which constitute nearly a quarter of the Earth's land area, have not performed up to their potential. Instead of playing a vibrant role in the life of their respective nations, mountains have, with some notable exceptions, failed to catch up with their surrounding areas in terms of the growth of environmental, social, and economic capital. It appears that, all too frequently, mountains have experienced losses of environmental capital through pollution, mining, erosion of soil, and biodiversity; of social capital

through breakdowns in families, social networks, and sociocultural disintegration; and of economic capital with stagnant economic growth, increasing poverty, destruction or deterioration of infrastructure, and lack of investment. Many mountain regions appear to have been hampered in realizing their full development potential over the past 2 decades. The reasons are very diverse and linked to different historical, geopolitical, environmental, and sociocultural contexts. This heterogeneity is a common feature and, therefore, has to be considered when searching for new pathways to achieve or promote SMD (see Box 1).

When comparing different geographic regions, a range of similarities and dissimilarities appear. In many regions, outmigration has led to a reduction of human power in traditional labor-intensive mountain land use systems. Although the resulting remittances may have helped to improve monetary income and possibly enhanced livelihood situations, they also have induced negative impacts, for example, on sociocultural landscapes and resources. Hence, although economic capital may have increased, social capital also has been strained (eg through separations within families and changes in value systems). However, the magnitude and impact of outmigration differ geographically. This is particularly true in Africa and Latin America, where many mountain regions seem to be considered as better places to live compared with lowland areas, which has led to an increase in population density in mountains and to pressure on scarce resources such as arable land.

However, independently of these places with increased population in mountains, the phenomenon of globalization coupled with persistent overall human population growth have led to a strong increase of pressure on mountain resources, particularly water and minerals,

which has triggered large-scale environmental degradation and led to reductions of a type of capital that is critical for SMD. Regrettably, many mountain regions also have been affected by violent conflicts, often triggered by geopolitical dynamics that have hindered or even inhibited SMD. The demise of the Soviet Union has even reversed development in many mountain regions, such as in parts of Central Asia, the Caucasus, and Eastern Europe.

In a broader comparative perspective, a range of common shortcomings to SMD has been identified (Maselli et al 2011). These relate, in particular, to a:

- Lack of involvement, active participation, and ownership of local mountain stakeholders and civil society at large;
- Lack of implementation of the Payment for Ecosystem Services principle as a funding mechanism for mountain systems; the few experiences to date have had mixed results; proper benefit sharing remains a challenge;
- Lack of targets, appropriate indicators, measurements, reliable data, and applicable monitoring systems to monitor and steer SMD at all levels; and
- Lack of clear resource ownership arrangements that recognize and empower local mountain communities as custodians and caretakers of vital resources for humanity as a whole.

Nevertheless, not all is doom and gloom in mountains and with regard to SMD. In fact, there have been many positive experiences, triggered by specific initiatives, programs, and projects that have provided opportunities to support mountain communities and enhance cooperation. One noteworthy example is the range of community-based organizations and networks, such as the Alliance of Central Asian Mountain Communities (developed with assistance from comparable networks in the Alps, that is, CIPRA

and Alliance in the Alps), which allows villages of Kyrgyzstan, Tajikistan, and Kazakhstan to exchange experiences and to cooperate.

From assessments to policy messages: the Lucerne World Mountain Conference

After the invitation of the Swiss Agency for Development and Cooperation (SDC) and the Mountain Partnership Initiative (hosted by Food and Agriculture Organization), international experts and policy-makers met at the Lucerne World Mountain Conference (Figure 1) on 11 and 12 October 2011 to discuss and convey the importance of mountains to Rio+20.

Twenty years after the Rio 1992 Earth Summit, participants from all walks of life met in Lucerne to make a compelling case for mountains in international development debates and negotiations. Given the transboundary nature of mountains and the interdisciplinary character of the issues at stake, one key entry point for Rio+20 links is the need for strengthened cooperation in mountain regions at all scales and with a variety of actors. The regional reports (Chassot et al 2011; CONDESAN 2011; ICIMOD 2011a, 2011b; Price et al 2011; UCA and Zoï Environment Network 2011; UNEP-Vienna 2011a, 2011b) presented at the Conference show that mountains could fuel the debate in all the relevant sectors at Rio+20: water, energy, food security, global environmental monitoring, social issues (with employment, education, and culture), risk preparedness, institutional arrangements and, in particular, Green Economy.

Strong in number, diversity, and complexity but also highly vulnerable owing to excessive poverty rates, mountains must stand tall on the global development agenda. A source of freshwater for half of the Earth's

BOX 1: Summary of key insights from global and regional assessments relating to SMD since Rio 1992**Key global features of the past 20 years**

- Political interest in mountains has risen due to climate change and its impacts on mountain ecosystems and livelihoods, with major consequences for lowlands.
- Nonarmed and armed conflicts have hampered development.
- Globalization has increased resource claims, urbanization, and outmigration.
- Growth of human populations has increased the pressure on mountain resources.

Key regional features of the past 20 years**Africa**

- The mobilization of sufficient investment in SMD has remained a major bottleneck and poverty remains high.
- Data and information on African mountain regions is scattered and decision-making thus remains mostly poorly informed.
- Many African mountain regions are isolated and still lag behind in development.

Alps

- The Alps have benefitted from economic development, transfer payments, and political stability within Europe.
- Major land use changes and a reduction in the number of farms have occurred.
- A rich institutional landscape is based on multiple ownership, supporting the Alps' development.
- The divide between prosperous and peripheral areas has further increased.

Andes

- The urbanization of mountains with high population densities is increasing the pressure on natural resources.
- The increased proliferation of mining is leading to environmental degradation, as local communities lack bargaining power.
- The recognition of traditional knowledge and agrobiodiversity has increased.

Central Asia

- The transition from a command to a market economy has caused major losses of human and physical capital.
- The creation of new borders has made regional exchange very difficult and sharing of resources, such as water in particular, a major transboundary issue.
- The numbers of migrants and remittances are soaring, with both positive and negative effects.
- The exploitation of mineral resources by private companies has increased, thus contributing to environmental hazards without adequately benefitting local people.

Eastern Europe

- The transition from a command to a market economy and the creation of new states has been accompanied by territorial disputes.
- A number of new institutions have been established, such as the Carpathian Convention; however, implementation is a challenge.

Hindu Kush–Himalaya (HKH)

- Warming at higher altitudes has been 3 to 5 times the global average. The HKH region has witnessed increased snow and glacial melt, and more frequent extreme events.
- Climate change increases the vulnerability of mountain livelihoods.
- The HKH plays a pivotal role as the water tower of Asia as it is the source of freshwater for more than 1.5 billion people.

Mesoamerica

- Climate change, mining, hydroelectric developments, urban sprawl, deforestation, and soil erosion are the main threats.
- Conservation and sustainable development initiatives offer opportunities for SMD, in contrast to the more densely populated and industrialized lowlands.

Middle East and North Africa

- The oil and petroleum sector plays a key role in economic development, and the nature of governance is very diverse.
- Key issues in the mountain regions include water resources, climate change, livestock, and land use, as well as tourism.

South East Asia and the Pacific (SEAP)

- Mountains in SEAP are global biodiversity hotspots, particularly threatened by economic globalization.
- External claims on natural resources are drastically increasing, without benefitting local communities.

(Adapted from Maselli et al 2011)

FIGURE 1 Closing panel at the Lucerne World Mountain Conference, 12 October 2011 (from left to right: Olman Serrano MPS, Daniel Maselli SDC, Brice Lalonde Rio +20, Michel Martin, Bruno Messerli, Jayanta Bandyopadhyay. (Photo by Alma Karsymbek, UCA)



population, mountains open the way for concrete measures to reduce poverty, overcome food insecurity, and enhance international (often transboundary) cooperation with benefits for all: mountain communities above and downstream cities below. To bundle the message from the assessments and the Conference, the organizers launched the Lucerne Call for Action (Box 2). This nonbinding declaration indicates that time has come to act rather than to continue debating.

Fostering concrete action: the World Mountain Forum for Sustainable Development

To date, there has been a rather mixed performance in promoting a global mountain agenda and SMD, and the outreach of global networks such as the Mountain Forum network and the Mountain Partnership Initiative remains limited. To move

forward, a truly innovative global multilevel multistakeholder platform for mountains and mountain people is being launched. The World Mountain Forum for Sustainable Development (WMF-for-SD) initiative intends to raise awareness about mountain issues, influence national and global agendas, promote open dialogue among the different stakeholders and shareholders and, foremost, help to generate funding to implement relevant development projects in mountain regions. The WMF-for-SD is a joint public and private initiative to promote SMD globally, contribute to improving living conditions, and reduce political neglect and economic marginalization of mountain people worldwide. The new platform should also help to enhance communication among and within mountain communities, as well as support their involvement in policy-relevant dialogue and actions. SDC is supporting a test launch of

the WMF platform during the International Mountain Day of the United Nations on 11 December 2011, jointly with the Verbier Green Pioneering Summit.

The WMF-for-SD will promote partnerships between the private sector, SDC, and other interested bi- and multilateral development agencies, as well as civil society organizations. The initiative aims at engaging matching funds under a variety of partnership modalities: not for profit, for profit, mixed, and others. To increase the ownership and sustainability of the initiated activities, the active involvement of local and national governments and communities shall be promoted.

The Carafe Initiative in Verbier, 2011

The Carafe Initiative is the first of many public-private partnership projects expected to be sponsored in the framework of the WMF-for-SD. The initiative involves the design and sale of locally produced water carafes

BOX 2: The Lucerne Call for Action

Mountains are vital for sustainable development and human wellbeing. More than half of the Earth's population depends on freshwater coming from mountains. Mountains also provide a number of important global goods and key services that are under increasing pressure from globalization and climate change.

Protecting future water supplies, reducing poverty in mountain populations, and unlocking the economic potential of mountains calls for the following actions:

- (1) **Adapt** and develop mountain governance that takes into account the unique characteristics of mountains to overcome poverty, food insecurity, and social exclusion.
- (2) **Facilitate** mountain communities to gain fair access to resources and share benefits of their use equitably.
- (3) **Involve** mountain people in decision-making processes that concern their livelihood, economy, environment, and culture.
- (4) **Strengthen** and develop national, regional, and global institutions that address highland-lowland interactions and transboundary cooperation, support capacity building, generation and dissemination of knowledge, technical expertise, and innovation for sustainable mountain development.
- (5) **Provide** enabling conditions and incentives for investment by the private sector in sustainable development in mountain areas and include appropriate funding in national budgets to enhance wellbeing and reduce disparities.
- (6) **Recognize** the vulnerability of mountain ecosystems within the 3 Rio conventions and adopt action plans for each related to sustainable development.
- (7) **Make the best use of** all new and existing funding mechanisms, for example, the Global Environment Facility.

to local hotels and restaurants, as well as private homes. The idea is to promote the consumption of Verbier's clean and delicious tap water. It brings together local residents, small business owners, the Commune de Bagnes, the Canton du Valais, the Fondation pour le développement durable des régions de montagne, and the SDC to promote the important cause of water conservation.

The Carafe Initiative embraces the 3 themes of this year's WMF-for-SD: conserve, construct, and celebrate mountains. To emphasize the importance of conservation is the initiative's central objective. It has grown out of a collective concern to use local resources sustainably, raise awareness about the global importance of water, and minimize the ecological footprint that results from drinking bottled water. Every year, the global production of bottled water uses up to 1.5 million t of plastic, which, in turn, require up to 47 million gallons (178 L) of oil to produce. The Val de Bagnes, in the Swiss Canton of Valais, is richly endowed with freshwater, fed in part by local glaciers and mountain snowpack. Elsewhere around the world, however, water stress is on the rise, with resources decreasing each

year due to global change and an ever-growing human population.

The importance of sustainable design and/or construction in mountains is also reflected in the Carafe Initiative, because the carafes are locally designed and produced. In addition, the proceeds from selling the carafe will be used to fund the implementation of "Blue Schools plus" in mountain regions in developing countries, which involves implementing safe drinking water and sanitation facilities, as well as hygiene, environmental, and nutrition programs in schools in poor mountain regions around the world.

The way forward: looking beyond Rio+20

If mountains and mountain people are to be heard, then substantial and effective efforts are needed to develop a powerful "global mountain lobby" that speaks with "one voice" in support of SMD. This requires considerably hard work at all levels and a great deal of coordination among many stakeholders and shareholders. The Resolutions of the UN General Assembly on SMD have been one instrument to draw attention to

mountains within the UN community. Another policy instrument has been the informal Mountain Focus Group at the UN in New York, where 2 meetings recently took place: at the Swiss Mission in May 2011 and at the Italian Mission in December 2011.

It is SDC's intention to remain an active player and ambassador for global SMD, especially with regard to international policy and networking. In addition, efforts shall be undertaken to stimulate increased funding from many different sources for the implementation of concrete development projects in mountain regions, for example, through public-private partnerships. By highlighting the important role of mountains, especially for climate change adaptation and mitigation, as well as in an effort to transit toward a greener economy, SMD should receive more attention, more funding, and more political support than in the past 2 decades since Rio 1992.

FURTHER READING

Websites (in alphabetical order)

Canton du Valais: www.vs.ch

Commune de Bagnes:

www.bagnes.ch

Consorcio para el Desarrollo

Sostenible de la Ecoregión Andina

(CONDESAN): www.condesan.org/portal
 Fondation pour le développement durable des régions de montagne: www.fddm.ch
 Food and Agriculture Organization (FAO): www.fao.org
 International Centre for Integrated Mountain Development (ICIMOD): www.icimod.org
 Lucerne World Mountain Conference: <http://mountainslucerne2011.mtnforum.org/>
 Mountain Forum (MF): www.mtnforum.org
 Mountain Partnership Initiative (MP): www.mountainpartnership.org
 Swiss Agency for Development and Cooperation (SDC): www.deza.admin.ch
 Swiss Commission for Research Partnerships with Developing Countries (KFPE): www.kfpe.ch
 University of Central Asia (UCA): www.ucentralasia.org
 Verbier Green Pioneering Summit: www.verbierrgs.com

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