



# Renewable Energy

## Impacts on Mountain Environments & People

Workshop 3.1E, International Mountain Conference Innsbruck, Austria

### Wednesday 11th of September 2019

Presentations: 4:00-5:30 pm, Theologie Madonnensaal

Posters: 5:45-7:00 pm, SOWI-Garden

### Organizers

Astrid Björnsen Gurung (Chair), Swiss Federal Research Institute WSL, Birmensdorf, Switzerland

Elke Kellner, Swiss Federal Research Institute WSL, Birmensdorf, Switzerland

Michael Lehning, Institute for Snow and Avalanche Research SLF, Davos, Switzerland

### Background

Mountain systems are well positioned to contribute significantly to the energy transition. Since more than a century, mountains have provided flexible, low-carbon hydropower and energy storage. With the increasing need to decarbonize the world's economies, mountains - having above-average potentials for wind and solar power - are shifting into the focus of energy providers. In addition, many mountains sustain large quantities of energy-wood that could be used more extensively for electricity, heat or fuel production. Yet, the shift towards renewables has limitations as well as consequences.

### Objectives

This workshop aims to

- (i) describe the current state of research on the **potential of renewable energy in mountain regions** (*"What is possible?"*);
- (ii) discuss benefits as well as anticipated **risks and environmental impacts** of expanding mountains' role as "power stations" (*"What are likely consequences?"*); and
- (iii) collect perspectives on the **desired energy futures** of mountain regions (*"What is our vision?"*).

### Participants

As the energy topic is relevant to various sectors and disciplines, the workshop invites researchers and experts interested in the development of future visions on the role of mountain systems in supporting the energy transition in various parts of the world.

### Products

- Contribution for Synthesis paper *Mountain Research and Development* (IMC organizers)
- Workshop report for IMC Website (IMC organizers)
- Joint Review Paper on RE in Mountain Systems (our target)



## Agenda

Before	<b>Feeling the pulse: 3 questions to the participants</b> (Flipchart survey) <ol style="list-style-type: none"> <li>1) Mountains are suitable for the production of renewable energy such as hydropower, PV, wind power and bioenergy (<b>feasibility</b>) (agree vs. disagree)</li> <li>2) Mountains should contribute to the energy transition by hosting energy infrastructure and provisioning the required resources (<b>desirability</b>) (agree vs. disagree)</li> <li>3) Major <b>obstacles</b> to turn mountains into power stations are: unwanted <u>environmental</u> impacts vs. <u>economic</u> feasibility (related to biophysical features, access and technological problems) vs. <u>social</u> aspects (acceptance, resource conflicts, complexity of regulatory systems) (voting in a triangle)</li> </ol>		
16:00	<b>Welcome, Introduction &amp; Instruction</b> <i>Astrid Björnsen Gurung, WSL</i>		
16:10	<b>Europe's Battery: A history of hydropower development in the Alps, 1850 to the present</b> <i>Marc Landry, Dept. of History &amp; Philosophy, New Orleans, USA</i>		
16:15	<b>Alpine Hydropower: Enabler of the energy transition</b> <i>Gottfried Goekler, Vorarlberger Illwerke AG, Austria</i>		
16:20	<b>Floating PV in mountain artificial lakes: a sustainable contribution?</b> (1' Poster Pitch) <i>Valentino C.L. Piana, HES-SO Valais, Institute of Sustainable Energy, Switzerland</i>		
16:22	<b>Social acceptance of the planned dam Trift in a valuable landscape in the Swiss Alps</b> <i>Elke Kellner, University of Bern, Institute of Geography &amp; Oeschger Centre for Climate Change Research, Switzerland</i>		
16:27	<b>Hands off the Alps? Choice experiment on peoples' preferences on landscape developments through new renewable energy infrastructures in Swiss Alpine landscapes</b> <i>Boris Salak, Swiss Federal Research Institute WSL, Switzerland</i>		
16:32	<b>How can socio-environmental resilience of high-altitude hydropower system be read in the landscape?</b> (1' Poster Pitch) <i>Matthieu Barril, EDYTEM, CNRS &amp; Université Savoie Mont-Blanc, France</i>		
16:34	<b>Wind energy potential in complex alpine terrain</b> <i>(Kruyt Bert), Michael Lehning, Institute for Snow and Avalanche Research SLF &amp; Ecole Polytechnique Fédérale de Lausanne EPFL, Switzerland</i>		
16:39	<b>PV production in snow covered mountains: benefits and risk</b> <i>Michael Lehning, Institute for Snow and Avalanche Research SLF Davos, Switzerland</i>		
16:44	<b>Project Sinfonia: "Passeggiata dei Castani"</b> <i>Gerhard Kopeinig, ARCH &amp; MORE, Austria</i>		
16:49	<b>Overview on presented research</b> (very brief open discussion) Which questions have been addressed? What can we learn from this? (Flipchart) <i>All, Moderation: Astrid Björnsen</i>		
17:00	<b>Carrousell</b> (free floating between the 3 sub-groups) <i>All</i>		
	<b>New Insights &amp; Main message/consensus</b> <i>Moderation: E. Kellner</i> <i>Recording: V. Piana</i>	<b>Major uncertainty issues &amp; Significant controversy</b> <i>Moderation: M. Lehning</i> <i>Recording: M. Barril tbc</i>	<b>Underrepresented research topics &amp; New research questions</b> <i>Moderation: A. Björnsen</i> <i>Recording: B. Salak</i>
17:20	<b>Highlights from the Carrousell</b> <i>E. Kellner, M. Lehning, A. Björnsen</i>		
17:25	<b>Final remarks</b> <i>All</i>		
17:30	<b>Next Steps &amp; Closing</b>		