

A METHOD FOR ASSESSING REGIONAL CLIMATE CHANGE VULNERABILITY: THE CASE OF TOURISM IN SWITZERLAND



Cecilia Matasci
cecilia.matasci@epfl.ch

Research Lab on the Economics and Management of the Environment (REME)



How is vulnerability to climate change spatially distributed? Which are its causes and its effects? Which are the major climate change vulnerability hotspots in which the implementation of adaptation measures is decisive?

1. INTRODUCTION

In Switzerland, tourism is an important economic activity and it is considered to be one of the most vulnerable to climate change [Ecoplan - Sigmaplan, 2007].

2. OBJECTIVES

We will develop a method to assess regional climate change vulnerability of the tourism sector. We will in particular :

- ❖ Provide an introduction to the concept of vulnerability in the context of climate change;
- ❖ Identify the key climate change impacts on the tourism sector in Switzerland;
- ❖ Identify some of the key determinants of vulnerability (indicators);
- ❖ Present spatial representations of relative vulnerability to key impacts throughout Switzerland;
- ❖ Provide stakeholders with an opportunity to review and comment on the assessment and suggest options for improvement and/or revision; and
- ❖ stimulate thinking about climate change drivers, impacts and adaptation responses.

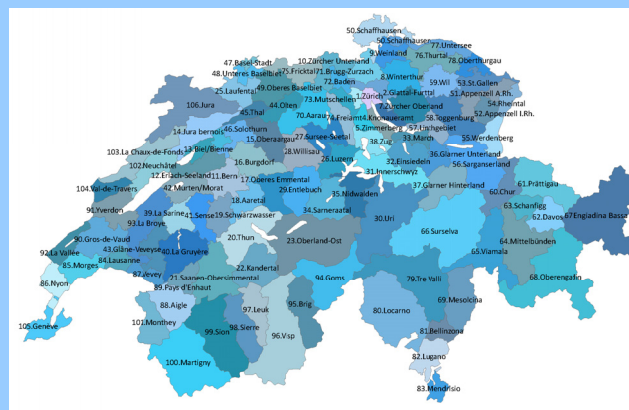


Figure 3 : the 106 Swiss MS regions [BFS, 2000]

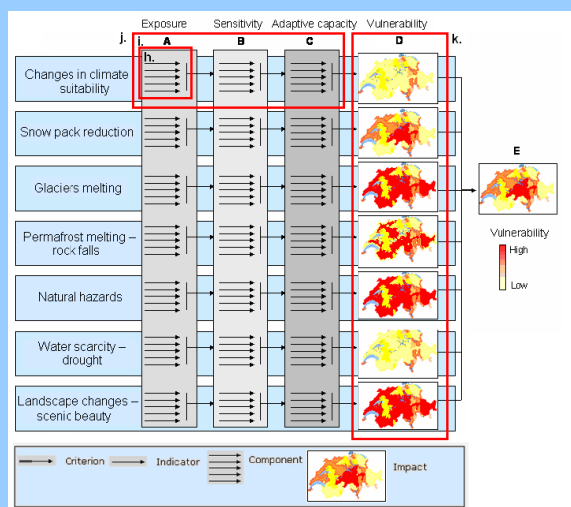


Figure 2 : conceptual method for assembling vulnerability maps. Maps of the components of vulnerability (A, B, and C) are developed from multiple indicators (I, J, and K), and summed to develop vulnerability maps (J, J, D). The vulnerability maps are subsequently weighted and summed (K) to develop a map of net climate change vulnerability for Switzerland (E). Colors and results are indicative.

Table 1 : three components of vulnerability (exposure, sensitivity and adaptive capacity), 19 classes regrouping the 67 indicators.

Exposure	Sensitivity	Adaptive capacity
Changes in climate suitability	Tourism structure	Feasibility
Snowpack reduction	Population	. Social
Glaciers melting	Economy	. Economic
Permafrost melting - rockfall	Infrastructure	. Technological
Natural hazards	Institution	. Institutional
Water scarcity - drought	Environment	. Environmental
Landscape - scenic beauty		Acceptability
		. Social

3. METHOD

The concept of vulnerability to climate change can be perceived as a function of three components (Figure 1). First, it is a function of exposure to direct (such as changes in temperature and rainfall average) and indirect (e.g. increased risk of natural hazards or snow pack reduction) impacts. Secondly, it is function of sensitivity of the region to them (e.g. tourism or population structure). Finally, it depends from its adaptive capacity (e.g. the social acceptability) [IPCC, 2007]. For the three components, we have selected a total of 67 indicators, divided into the 19 classes presented in Table 1. Indicators will be summed as presented in Figure 2.

We made a selection of seven impacts, following our previous survey of estimates of physical impacts of climate change [Matasci, 2008] :

- Changes in climate suitability (Tourism Climate Index);
- Snow pack reduction;
- Glaciers melting;
- Permafrost melting – rock falls;
- Natural hazards;
- Water scarcity – drought ;
- Landscape changes – scenic beauty

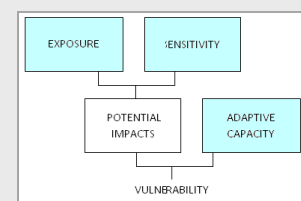


Figure 1 : Components of vulnerability [Allen Consulting Group, 2005].

The spatial level of analysis chosen is the spatial mobility region (MS region, Figure 3).

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