

Reinterpreting the Precautionary Principle



Article

A Qualitative Hydro-Geomorphological Prediction of the Destiny of the Mojana Region (Magdalena-Cauca Basin, Colombia), to Inform Large Scale Decision Making

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Academic Editors: Tim Prior and Anna Scolobig
Received: 27 February 2016; Accepted: 14 June 2016; Published: 24 June 2016

Abstract: Colombia is undergoing a period of rapid development. In particular, the Magdalena-Cauca Rivers basin, and the Mojana region within it, is going to experience rapid expansion in infrastructure growth, entailing hydropower development, road and navigability works along hundreds of kilometers of channels, as well as standard flood control measures. This paper argues that unexpected and undesired outcomes are very likely to occur as a consequence of the hydraulic and geomorphological reaction of river systems to such development schemes; namely, we foresee heightened hydro-morphological risks, along with the loss of environmental services and strong increases in maintenance costs. River behavior has been the subject of extensive study by diverse disciplines. As a result, key principles of fluvial dynamics have been elucidated and specific quantitative prediction tools developed. In this paper we do rely on this wealth of knowledge. However, since specific local information and interpretative tools in Colombia are either lacking or unreliable, it is inevitable that, at the moment, any basin scale analysis has to remain qualitative and must incorporate several assumptions, leaving it open to questioning and further refinement. Nonetheless, we argue that advancing such type of speculative conjectures is the "right thing to do". The undeniably desirable but hard to achieve alternative of waiting for sufficient datasets and tools would entail excessive delay in obtaining relevant answers while large-scale development would continue to occur with potentially damaging results. Therefore, our analysis is conceived along the *precautionary principle*. This paper is primarily aimed at technical advisors of policy makers as it offers scientifically-based arguments for informing the political debate, hopefully guiding decision makers towards better choices. Rather than advocating specific solutions, the focus is on pointing out the likely adverse consequences of the currently planned course of action.

Keywords: river basin planning; holistic approach; hydro-geomorphological prediction; qualitative approach; La Mojana (Colombia); developing countries; precautionary principle; complex decision making

1. Introduction

Following a World Bank expert mission in the 1950s, there has been widespread political debate regarding several initiatives for the development of agricultural districts and modern transport infrastructure in the Mojana region, along with proposed policies for a complete control of its natural dynamics characterized by periodic harsh flooding and subsequent drought periods [1]; ecosystem conservation was also considered [2]. This process took on a renewed impulse after the "Ola Invernal"

Resources 2016, 5, 22; doi:10.3390/resources503022

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