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Dangerous Passage or Safe Corridors? Modelling Challenges in Planetary Socio-Ecology

W. Lucht

Potsdam Institute for Climate Impact Modelling and Dept. of Geography, Humboldt-Universität zu Berlin, Germany

Limiting global warming to 2 degrees is advised because beyond, the impacts of climate change on societies is potentially “dangerous”, “unmanageable”, “disruptive”. But do we have quantitative simulation models that show this convincingly? Or will a future green economy provide a no-regrets way out of a dirty bottleneck?More systematic analysis of climate change impacts is one challenge – new projects under way such as ISI-MIP aim to produce them. Studying these impacts in light of societal factors underpinning their functioning as networked actors of the 21st century is another. “Earth system models” have traditionally treated the outcomes of social processes and environmental influences upon them in scenario mode, focussing largely on the dynamics of the environmental system under prescribed forcing. In a full model of planetary socio-environmental co-evolution, however, the complexity of modelling in the environmental and social dimensions would be similar.The economics of climate change are advancing well, but the environmental costs and social implications of implementations remain under-researched.The implications of energy use for land use areignored or are treated simplistically. Despite a number of interesting developments, an advanced global socio-ecological model is still lacking. It is worthwhile to once more consider what it would take. For in the absence of appropriate quantitativemodels, there is a distinct danger that partial solutions may fall well short of the overall goal of developing the planetary socio-ecological system to increased sustainability.