

# SÉMINAIRE

## DES DOCTORANTS

Mathilde Salin: Nature-Economy Integrated assessment modelling: a critical review

### ABSTRACT

Reversing the loss of biodiversity and ecosystems (broadly called “nature” in this paper) is an important macroeconomic challenge of the green transition. So-called Integrated Assessment Models (IAMs) have been the favoured tools by economists and policymakers to understand climate-economy relationships and explore policy options, in particular through the design of scenarios. Recent efforts now seek to adapt both theoretical and applied IAMs to also address issues relating to nature loss. In this paper, we develop a novel analytical framework to evaluate these emerging ‘nature-IAMs’. After reviewing a few theoretical ‘nature-IAMs’, we perform an in-depth review of 6 global and widely-used applied integrated-assessment models, and critically assess how the dependencies of human activities on nature are represented, as well as the policies to reverse nature-loss. We find that these applied IAMs are generally skewed to capturing the dependency of the economy to selected provisioning ecosystem services, with regulating and maintenance services less often represented. As these models tend to focus on the land-use and climate drivers of biodiversity loss, the transition policies they capture only aim to mitigate those drivers and overlook other drivers of nature loss such as pollution or invasive alien species. However, whatever the economic dependencies on nature and the transition policies represented in the models, we also find that some theoretical assumptions in the core macroeconomic part of the models may tend to mitigate the economic consequences of nature loss and nature transition policies. Building on an extensive literature critiquing in climate-IAMs, we assess the potential shortcomings of equilibrium-based and neoclassical modelling assumptions in exploring the additional complexities posed by biodiversity loss

[BRAINSTORMING]

**THURSDAY OCTOBER 26, 4:30-5:30 - MEETING ROOM + ZOOM**

ORGANIZERS: CLÉMENT BOYER, THIBAUT BRIERA, BERTILLE DARAN, SIMON JEAN & BAPTISTE PARENT