

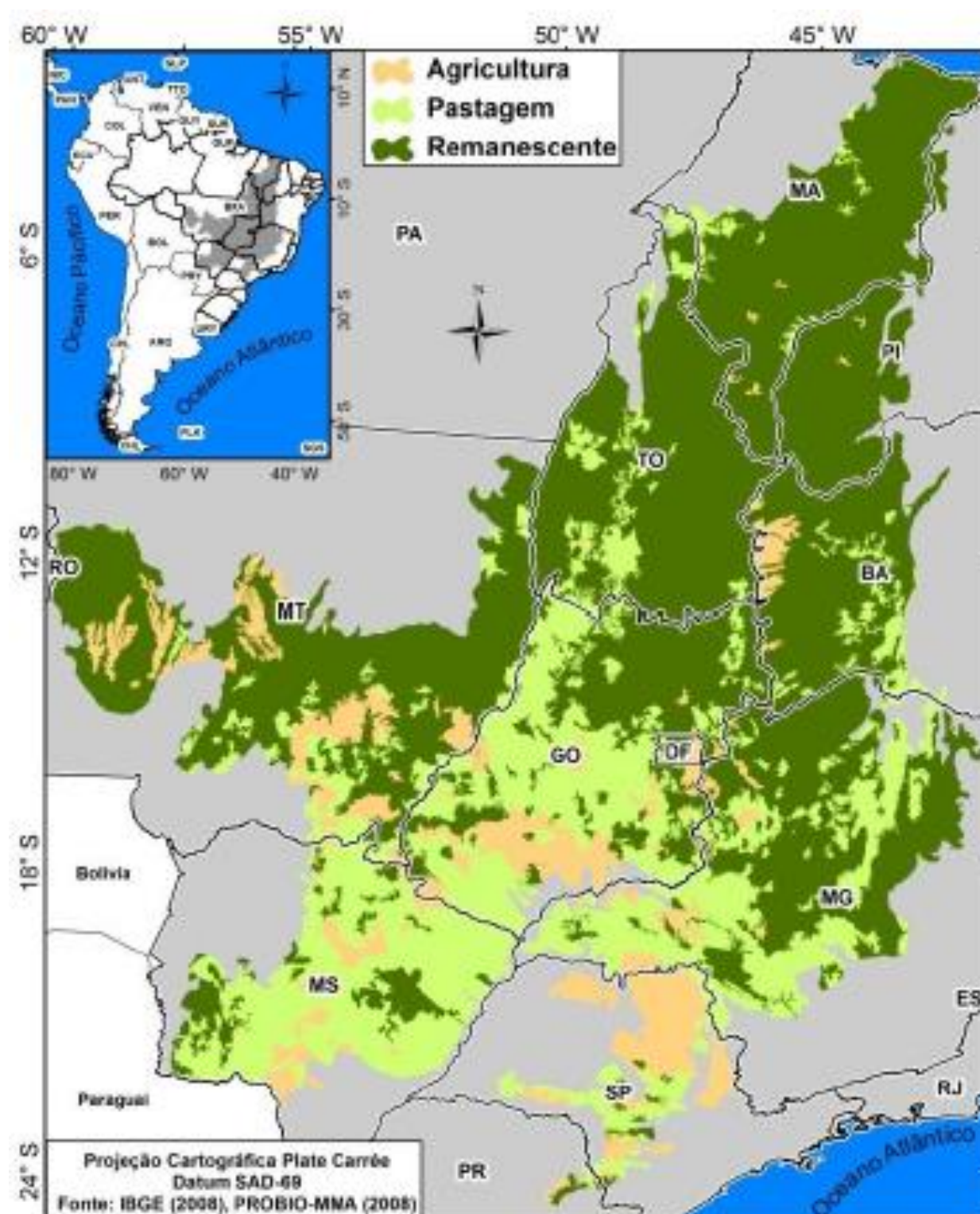
Impacts of expansion of bioethanol production on biodiversity

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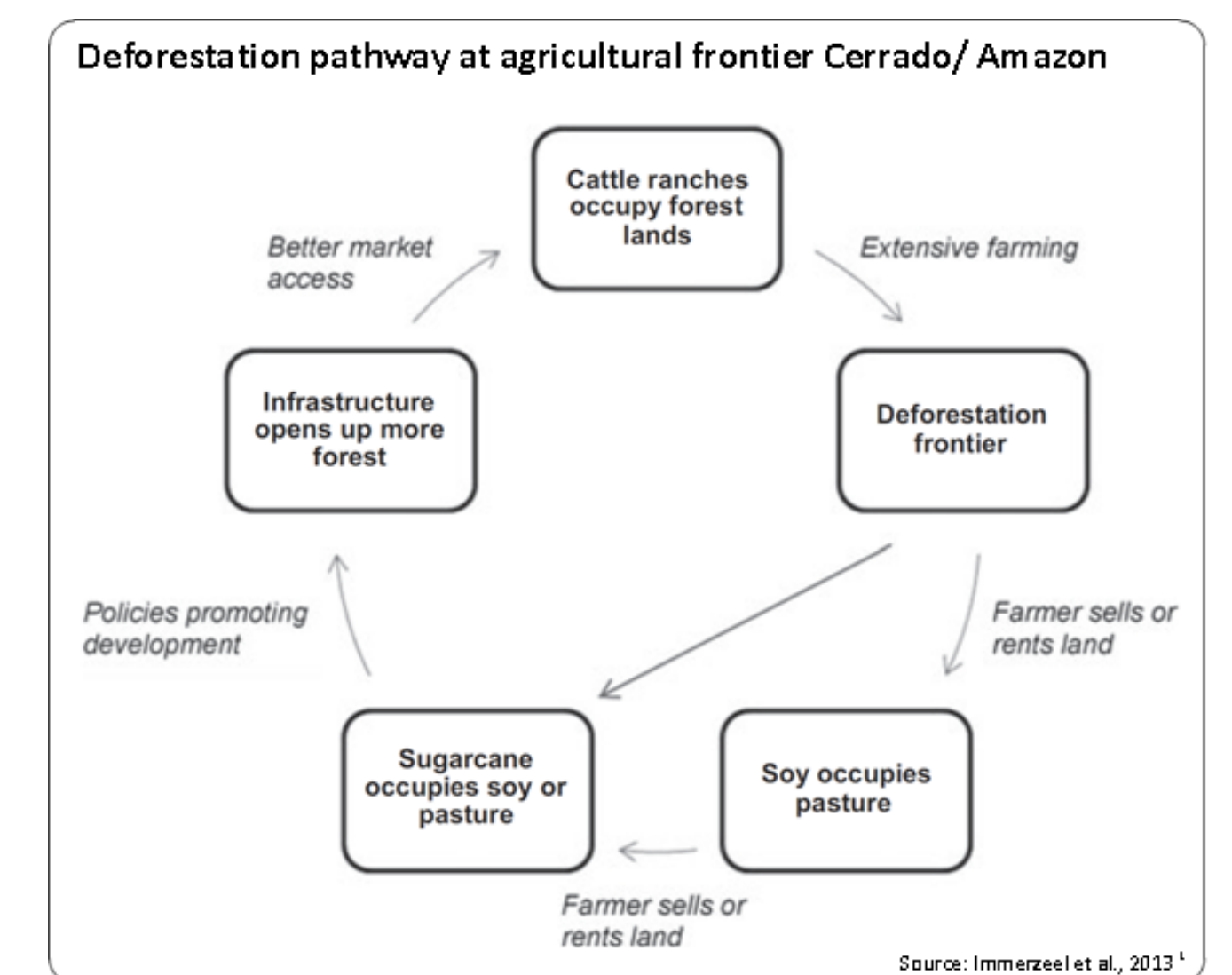
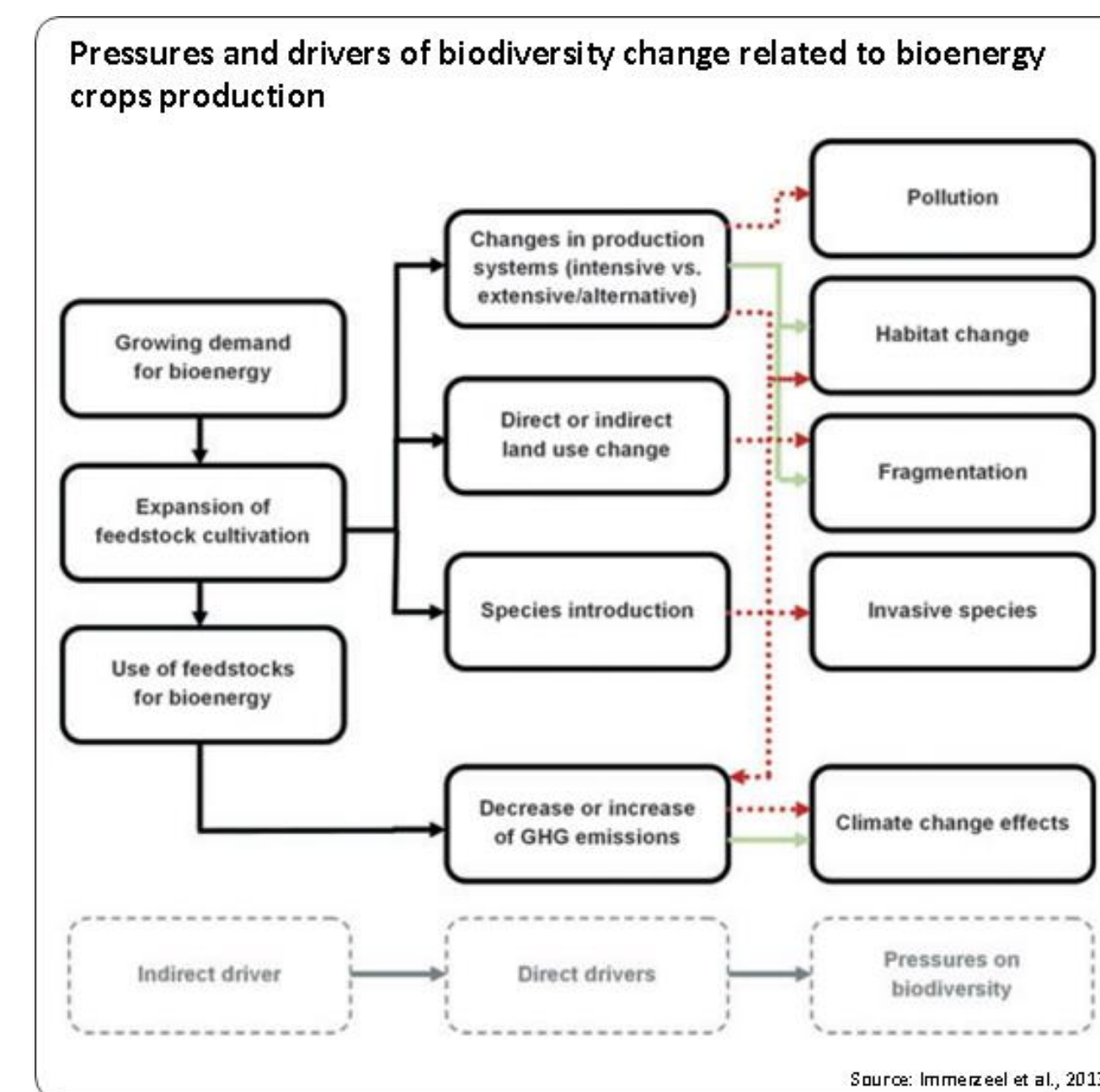
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Introduction

- One of the key sustainability issues related to the growing demand for bioenergy concerns the impact of large-scale biomass production on biodiversity.
- In Brazil, the land in use for sugarcane bioethanol production is expected to expand over the next few decades.
- However, adequate knowledge on the potential effects of related (indirect) land use change on biodiversity is lacking.
- Therefore, we study these effects on a regional level.



Iguazu river, Brazil

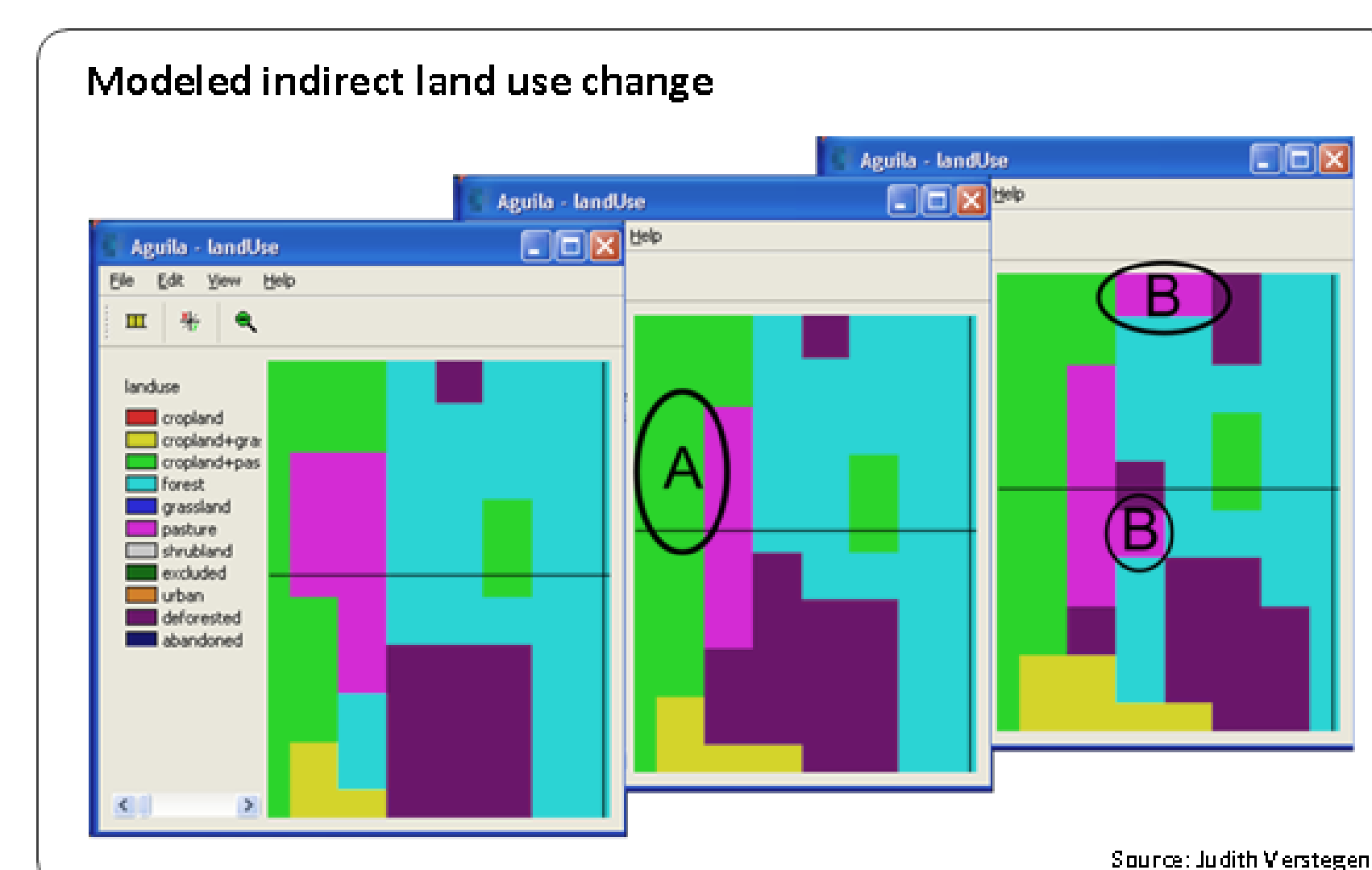
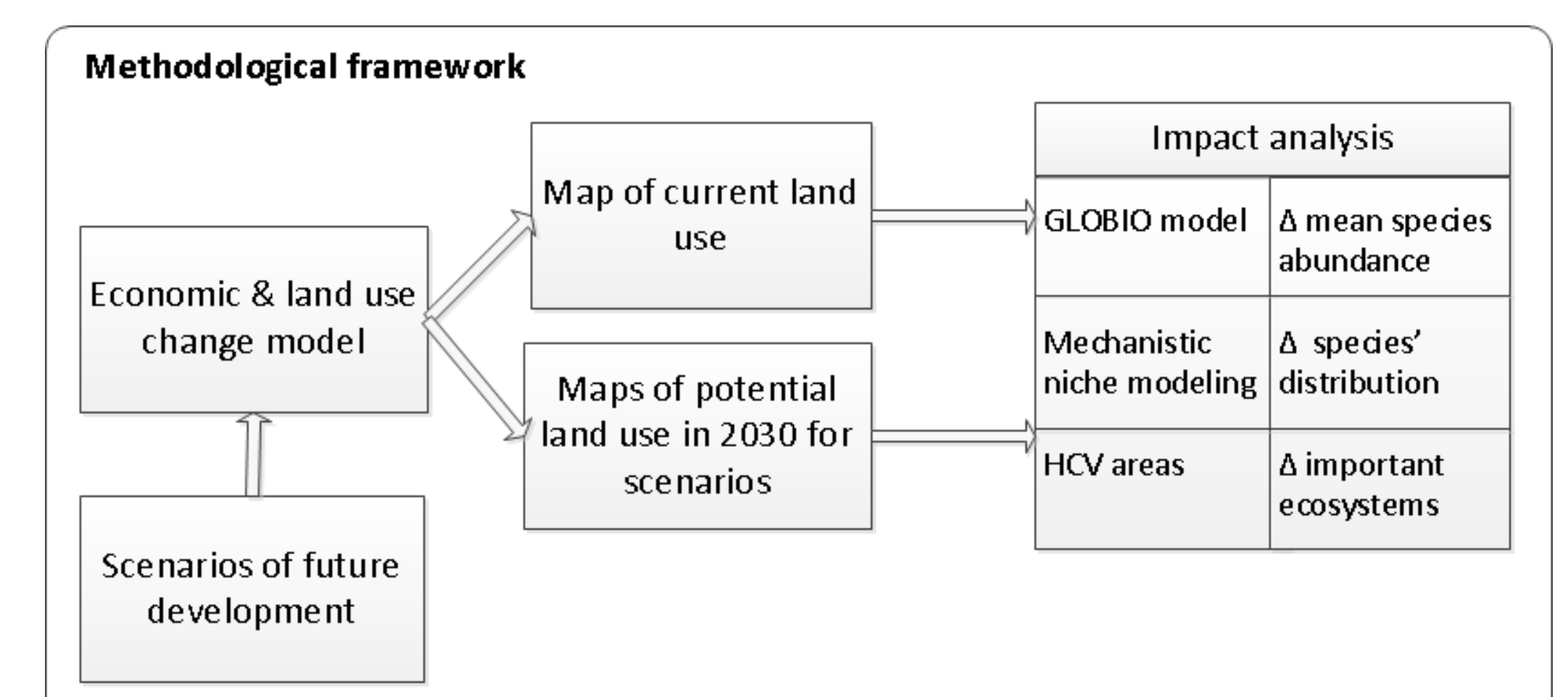


Methods

- Annual maps up to 2030 of potential future land use for various policy scenarios are developed.
- Based on the difference between current land use and potential future land use the potential impacts of land use change on biodiversity are assessed.
- Various complementary methods are used that address different levels of biodiversity, e.g.:
 - Mechanistic niche-based modeling using habitat preference and species distribution data².
 - Dose-response modeling using the GLOBIO model³.
 - High conservation value areas approach
- These methods enable including changes in agro-biodiversity and effects of land use intensification, processes that are expected to be significant for potential impacts.

Results & Implications

- The potential effects of land use change on biodiversity are obtained for:
 - Two policy scenarios: progressive and business-as-usual.
 - Various biodiversity indicators, such as (variants of) species richness or abundance.
 - Various regions in Brazil.
- Results provide insights in the potential impacts and key dynamics involved, which can contribute to strategies for proper land use planning and standards for sustainable biofuel production.
- By including and comparing various methodologies, this study aims to contribute to the development of a methodological framework.
- The study is part of an integrated impact assessment at a regional level in which, additionally, potential impacts on socio-economics and water resources are assessed.



Endemic bird species Cuba, Cuban Tody (*Todus multicolor*)

References

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