



MINISTÉRIO DA CIÊNCIA E TECNOLOGIA
INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS

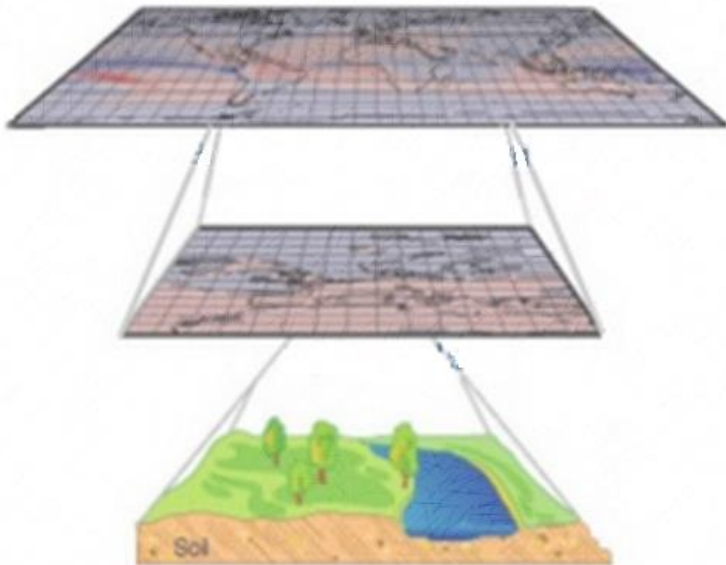
Ferramentas de modelagem do CCST: cenários e próximos passos

Ana Paula D Aguiar

(INPE/CCST e Stockholm Resilience Centre – Stockholm University)



Ambiente de modelagem do CCST: Visao



Construir um arcabouço computacional que permita:

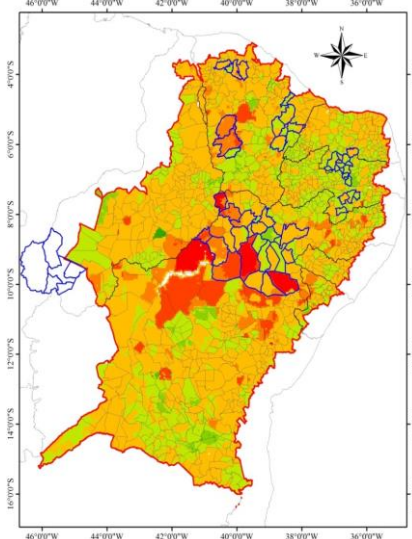
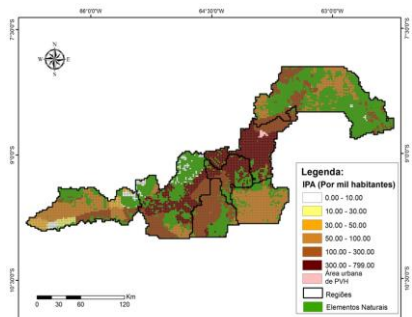
1. Representar e entender processos em sistemas socio-ecológicos em multiplas escalas.
2. **Construir cenários regionalmente** relevantes, ligados a cenários globais.

LuccME

INLAND

INPE-EM





I WORKSHOP DE APLICAÇÕES DO LUCCEME DO CCST/INPE



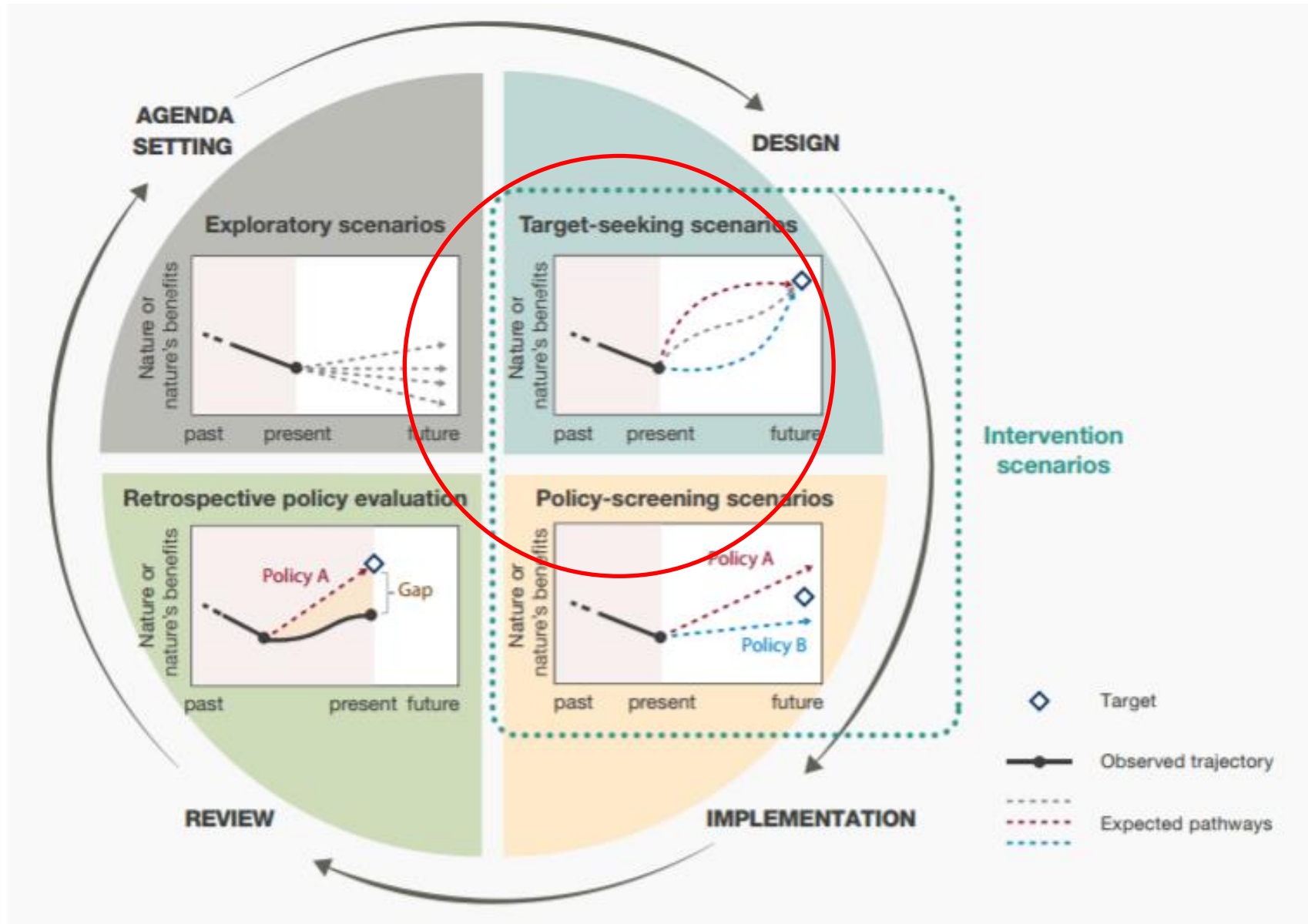
I WORKSHOP DE APLICAÇÕES DO LUCCEME

06 e 07 de abril de 2017 – Auditório Fernando Mendonça (LIT)

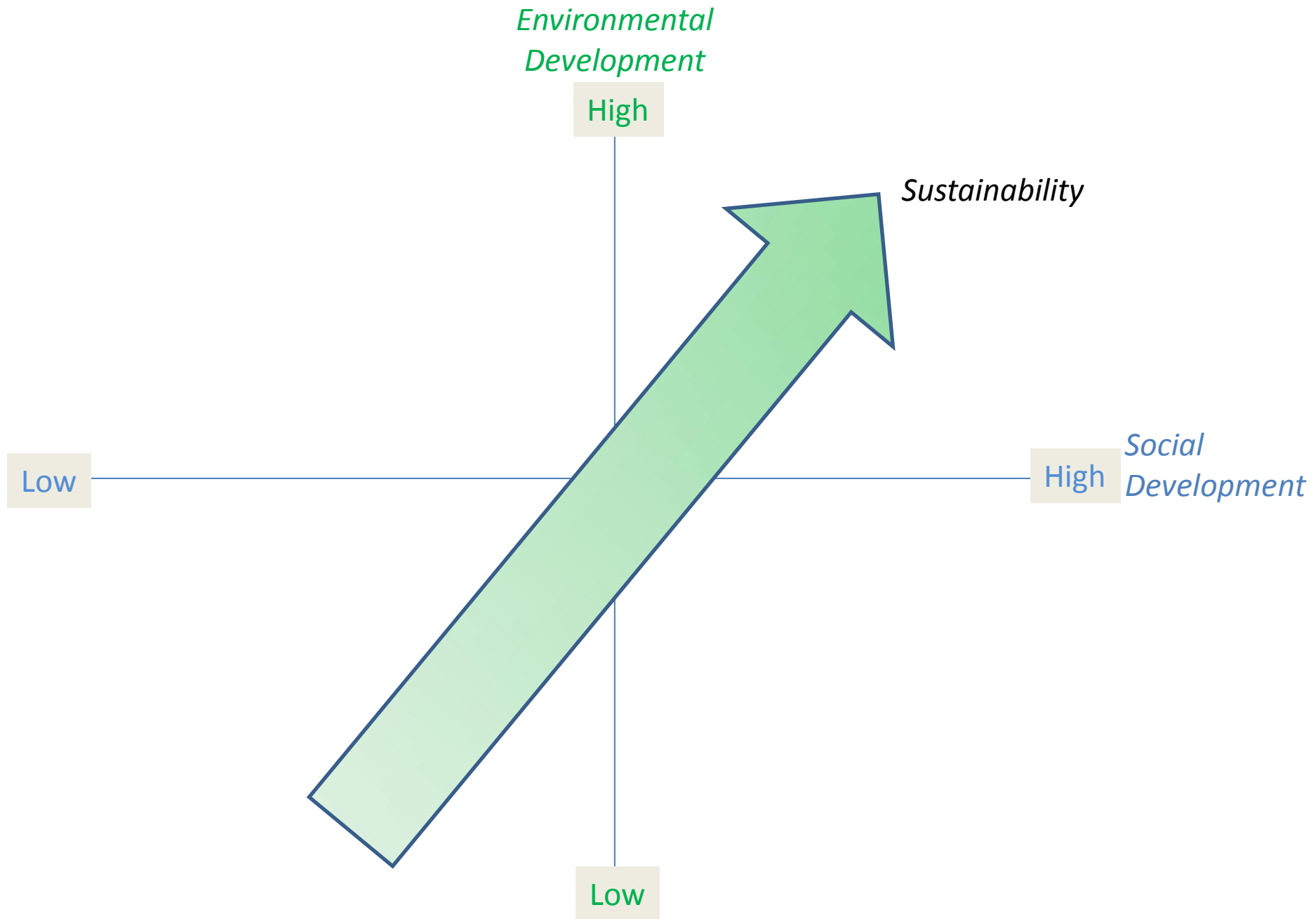
INPE, São José dos Campos, SP

O **LuccME** (<http://luccme.ccst.inpe.br/>) é um arcabouço para modelagem de uso da terra espacialmente explícita, desenvolvido pelo Centro de Ciência do Sistema Terrestre (CCST/INPE) e colaboradores, como uma extensão do ambiente de modelagem TerraME. O objetivo principal do Workshop é promover o debate sobre as possibilidades de aplicações do LuccME, através da discussão de casos de sucesso em diferentes escalas – incluindo





Fonte: IPBES





Contents lists available at ScienceDirect

Futures

journal homepage: www.elsevier.com/locate/futures



Multi-scale participatory scenario methods and territorial planning in the Brazilian Amazon



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ABSTRACT

In recent years, discussions regarding *scenarios methods* for the Brazilian Amazon have been mostly explored from the sole perspective of deforestation concerns. This paper proposes an original approach using participatory scenarios as a method that may be able to put in perspective, at different levels of decision-making, a specific action of territorial planning in Pará State, Brazil. The method allows the dialogue between stakeholder representatives, government organizations and communities involved in that territorial process. The scenarios produced substantial and sometimes contradictory data: while they can be considered as a way of empowerment for the local communities, participatory scenarios also have their limits and may reveal structural forms of authority or domination within the project-promoting institutions and local communities. The information collected allows scientists of various areas (Modeling, Social Sciences), community leaders and managers to elaborate a reflection upon the levers that may condition the implementation of effective actions and public policies in territorial units.

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Global Change Biology

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PDF



Info

Primary Research Articles

Land use change emission scenarios: anticipating a forest transition process in the Brazilian Amazon?

Ana Paula Dutra Aguiar , Ima Célia Guimarães Vieira, Talita Oliveira Assis, Eloi L Dalla-Nora, Peter Mann de Toledo, Roberto Araújo de Oliveira Santos-Junior, Mateus Batistella, Andrea Santos Coelho, Elza Kawakami Savaget, Luiz Eduardo Oliveira Cruz de Aragão, Carlos Afonso Nobre, Jean Pierre H. Ometto

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DOI: 10.1111/gcb.13134 [View/save citation](#)

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Abstract

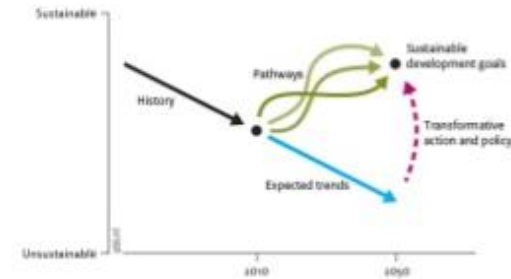
Following an intense occupation process that was initiated in the 1960s, deforestation rates in the Brazilian Amazon have decreased significantly since 2004, stabilizing around 6000km²yr⁻¹ in the last 5 years. A convergence of conditions contributed to this, including the creation of protected areas, the use of effective monitoring systems, and credit restriction mechanisms. Nevertheless, other threats remain, including the rapidly expanding global markets for agricultural commodities, large-scale transportation and energy infrastructure projects, and weak institutions. We propose three updated qualitative and quantitative land use scenarios for the Brazilian Amazon, including a normative "Sustainability" scenario in which we envision major socioeconomic, institutional and environmental achievements in the region. We developed an

Roads from Rio+20

Pathways to achieve global sustainability goals by 2050



Characterisation of three pathways

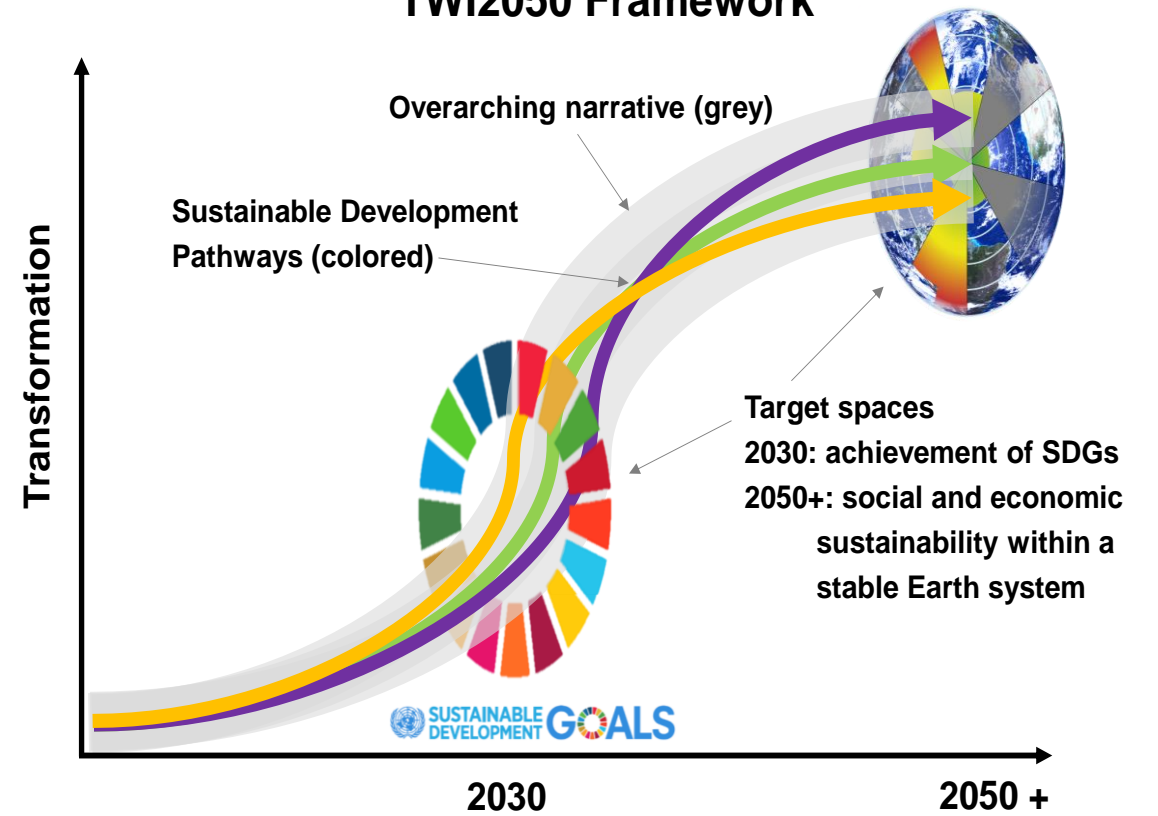


ALL achieving multiple goals but with alternative underlying premises in relation to:
Consumption patterns, trade, agricultural productivity, protected areas, infrastructure, etc.

Detlef P. van Vuuren et al. Pathways to achieve a set of ambitious global sustainability objectives by 2050: Explorations using the IMAGE integrated assessment model, *Technological Forecasting and Social Change*, Volume 98, 2015, Pages 303-323, ISSN 0040-1625, <https://doi.org/10.1016/j.techfore.2015.03.005>.



TWI2050 Framework



THE WORLD IN 2050 “CONSORTIUM”

- AIMES
- Brazilian Institute for Space Research (INPE)
- Centre for Integrated Studies on Climate Change and the Environment (CIRED)
- Commonwealth Scientific and Industrial Research Organization (CSIRO)
- Earth League, whole Earth system modelling initiative
- **Earth Institute, Columbia University**
- Energy Planning Program, COPPE, Federal University of Rio de Janeiro
- Fondazione Eni Enrico Mattei (FEEM)
- Future Earth
- German Development Institute (DIE)
- Global Ocean Ecosystem Dynamics (GLOBEC)
- Indian Institute International Futures
- Indian Institute of Technology (IIT)
- International Energy Agency (IEA)
- International Food Policy Research Institute (IFPRI)
- International Monetary Fund (IMF)
- **International Institute for Applied System Analysis (IIASA)**
- Intergovernmental Panel on Climate Change (IPCC)
- Joint Research Centre, European Commission
- Joint Global Change Research Institute at Pacific Northwest National Laboratory (JGCR)
- Mercator Research Institute on Global Commons and Climate Change
- National Center for Atmospheric Research (NCAR)
- National Institute for Environmental Studies (NIES)
- National Renewable Energy Laboratory (NREL)
- Organisation for Economic Co-operation and Development (OECD)
- Potsdam Institute for Climate Impact Change (PIK)
- PBL - Netherlands Environmental Assessment Agency
- Research Institute of Innovative Technology for the Earth (RITE)
- Stanford University
- **Stockholm Resilience Centre**
- **Sustainable Development Solutions Network (SDSN)**
- The City University of New York (CUNY)
- Tsinghua University
- UN Population Division
- UN DESA
- UNEP- World Conservation Monitoring Centre (UNEP-WCMC)
- University of Hamburg
- World Bank



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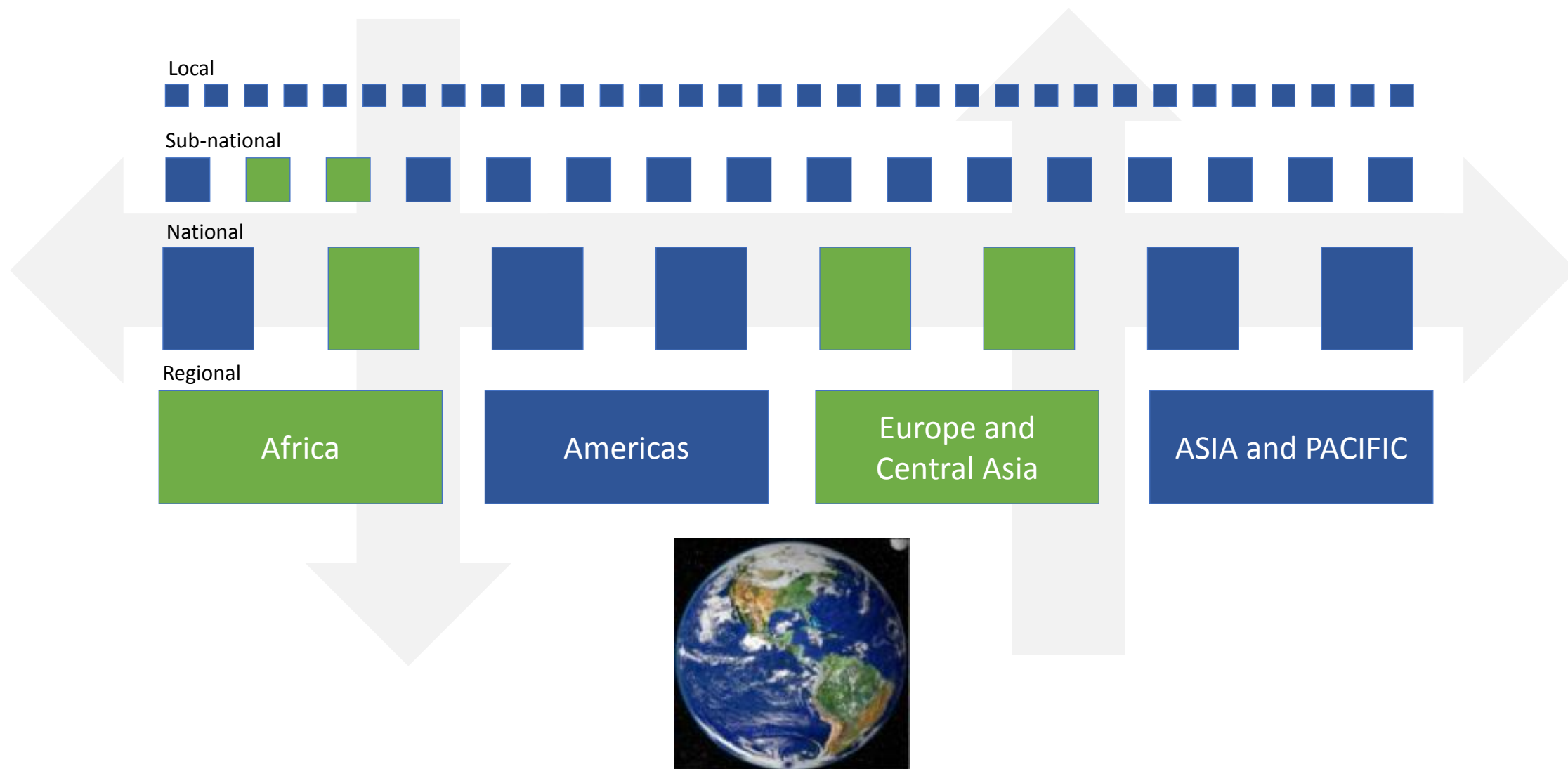
Odi Selomane



Uno Svedin

Multiple participatory, analytical and modelling approaches at different scales

Cross-scale interactions and synthesis: horizontal/vertical interactions



Stockholm Resilience Centre

Co-Chairs' Summary Report



The African Dialogue on The World In 2050

Kigali, Rwanda: 28–29 August 2017

A REPORT CO-PRODUCED BY:
SwedBio
A programme at Stockholm Resilience Centre

SDG
THE SUSTAINABLE
DEVELOPMENT
GOALS
CENTER FOR
AFRICA

Starting participatory processes and adapting existing multiscale methods to the SDGs

1st African Dialog
(August 2017)



2nd African Dialog
(Fall 2018)



What do global pathways represent for different regions? Are they feasible? How can they be achieved?

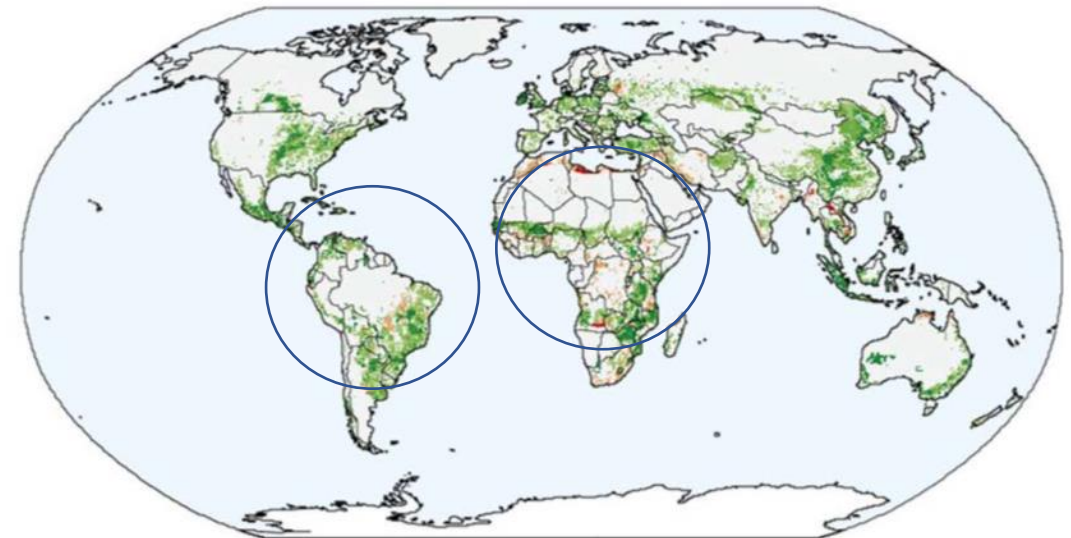
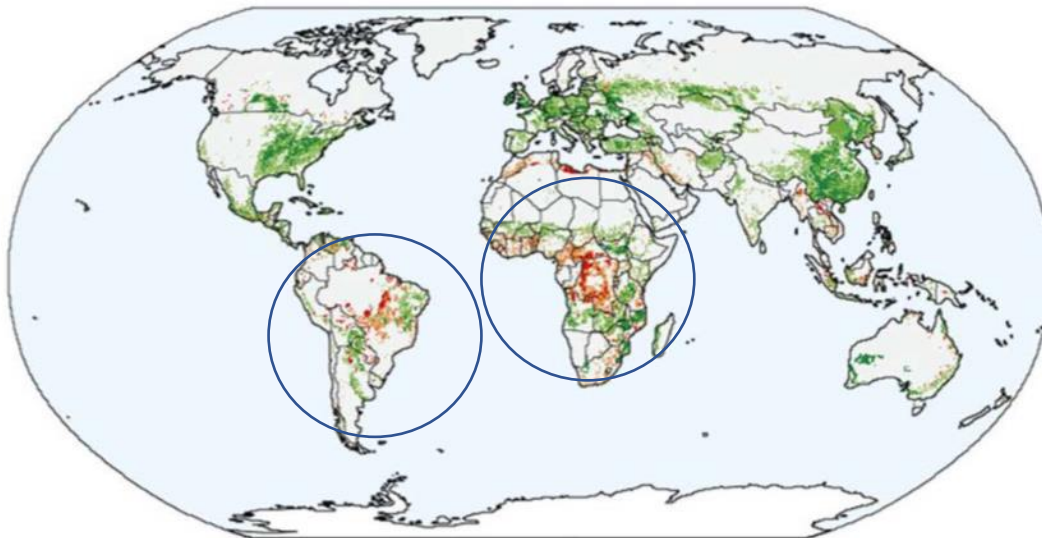
J.C. Doelman et al.

Global Environmental Change 48 (2018) 119–135

Land-use change: 2010 – 2100

SSP1

SSP1 – 1.9



Doelman et al., Exploring SSP land-use dynamics using the IMAGE model: Regional and gridded scenarios of land-use change and land-based climate change mitigation. January 2018. *Global Environmental Change* 48:119-135 DOI10.1016/j.gloenvcha.2017.11.014

E como o CCST e os resultados do Sub6 vão contribuir para essa agenda?

LuccME-Brasil



LuccME BRASIL: platform for participatory and modelling initiatives toward pathways to a sustainable future

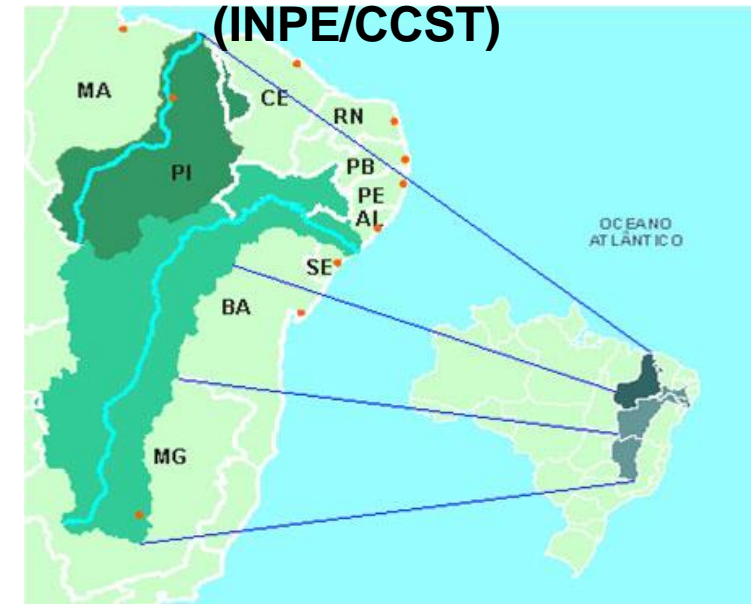


BR2050+ (MCTI, COPPE, INPE)

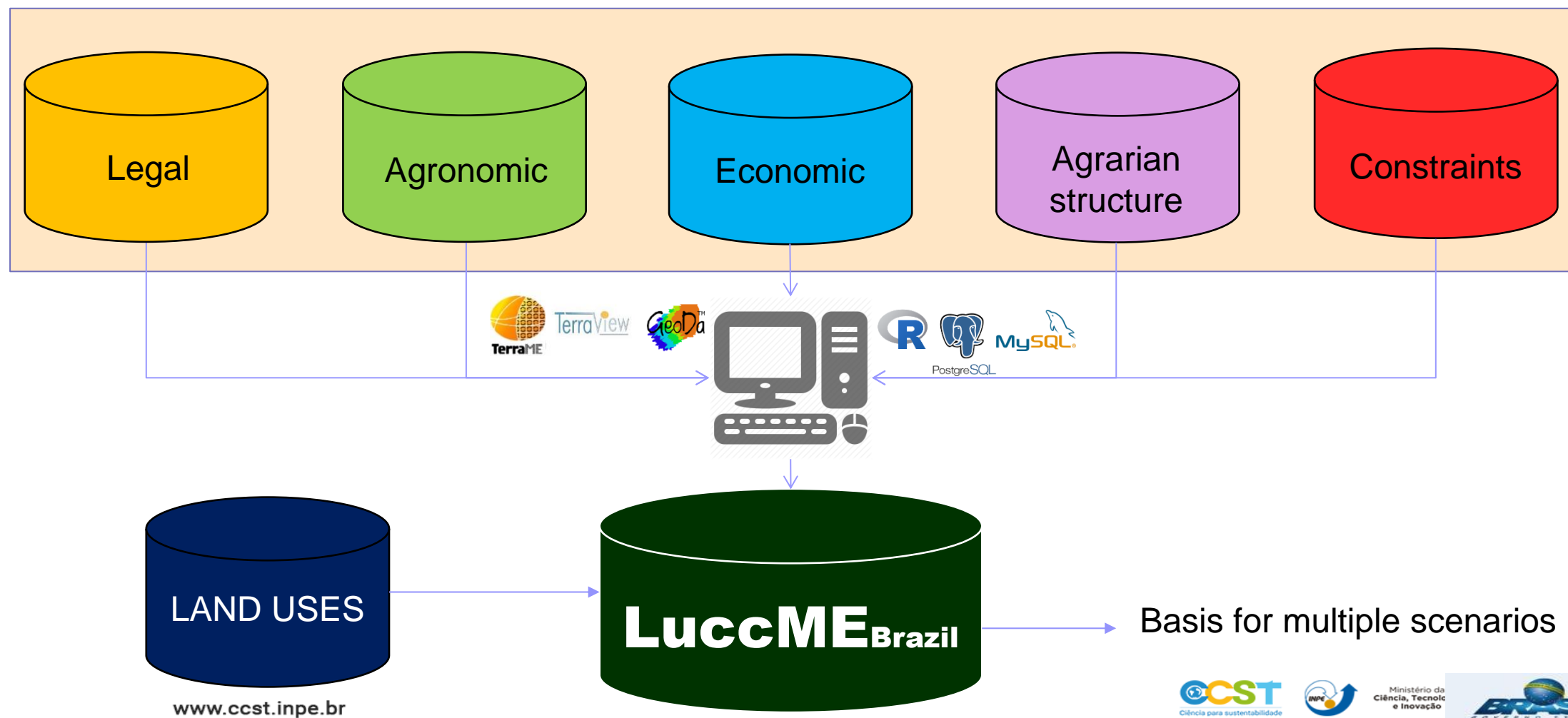


- Tropical Rain Forest
- Cerrado (Savanna)
- Caatinga (Thorny Shrub)
- Pantanal (Periodically Wet Land)
- Tropical Semideciduous Forest
- Pampas (Grassland)

Sao Francisco e Parnaiba watersheds: transition to sustainability (INPE/CCST)



Land use drivers



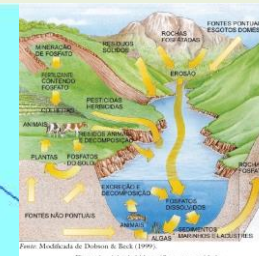
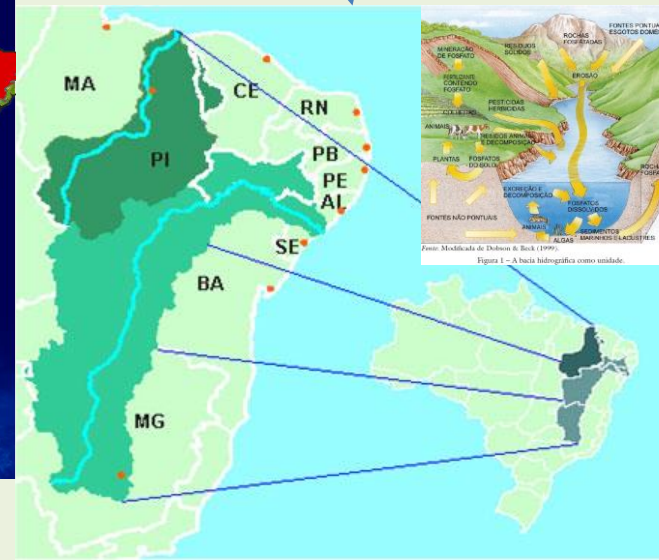
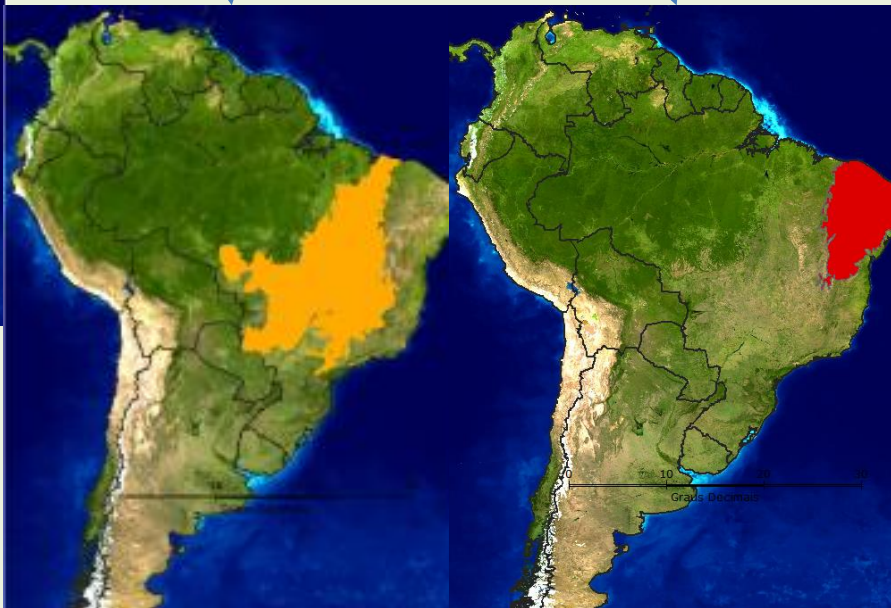


1. Escala de bioma: Bioma Cerrado e Bioma Caatinga
2. Escala de região hidrográfica: Região hidrográfica do São Francisco e do Parnaíba
3. Escala municipal: Dois municípios selecionados como resultado da primeira etapa do projeto

Futuro desejado (sustentabilidade) e **não desejado (convencional)** em termos de **indicadores de sustentabilidade** discutidos nas três escalas.



Narrativas do projeto alinhadas a narrativas globais e para o Brasil (baseadas na literatura e em outros projetos)



Proposal for the involvement of the society in the discussion of pathways to achieve the SDGs at multiple scales and geographic contexts



STEP 1 (PRESENT)

- 1.1. Selection of SDG indicators *for each scale and geographic context*
- 1.2 Evaluation of current situation and trends regarding those indicators at that scale

STEP 4 (PATHWAY SYNTHESIS AND ACTIONS)

- 4.1 Scientific synthesis of quantitative and qualitative results at the multiple scales
- 4.2 Follow up on actions discussed in the pathways (political arena)



STEP 2 (DESIRED FUTURES/TARGET SPACES)

- 2.1 Definition of desired (TARGET SPACES) and undesired futures* *in relation to the selected SDG indicators for each scale and geographic context*
- 2.2 Initial discussion on pathways and modelling protocols

STEP 3 (HOW TO GET THERE)

- 3.1 Quantitative back-casting (multiple modelling approaches)
- 3.2 Qualitative back-casting (multiple participatory approaches)

as appropriated to each scale and geographic context

*To include the “undesired future” in SETP 2 is important to provide the impulse (the future people want to avoid) towards the sustainable future. STEP 3 deals only with the desired future.

Sustainable development brings the question of the future to the strategic forefront of scientific research, policy deliberation, forward-thinking organizations, and the concerns of citizens.”

(Raskin et al., 2005)

D. Miriam, Nova fronteira INCRA settlement:
(Novo Progresso, Pará)

