Transitions to Circular Economy

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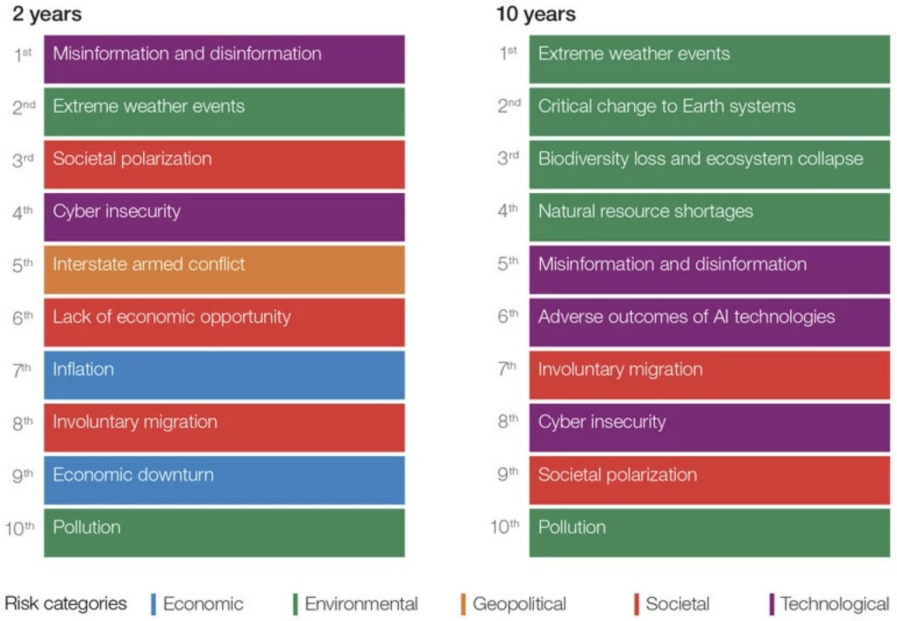

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1. Top 10 Risks

Global Risks Report 2024

Top 10 risks

"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period."



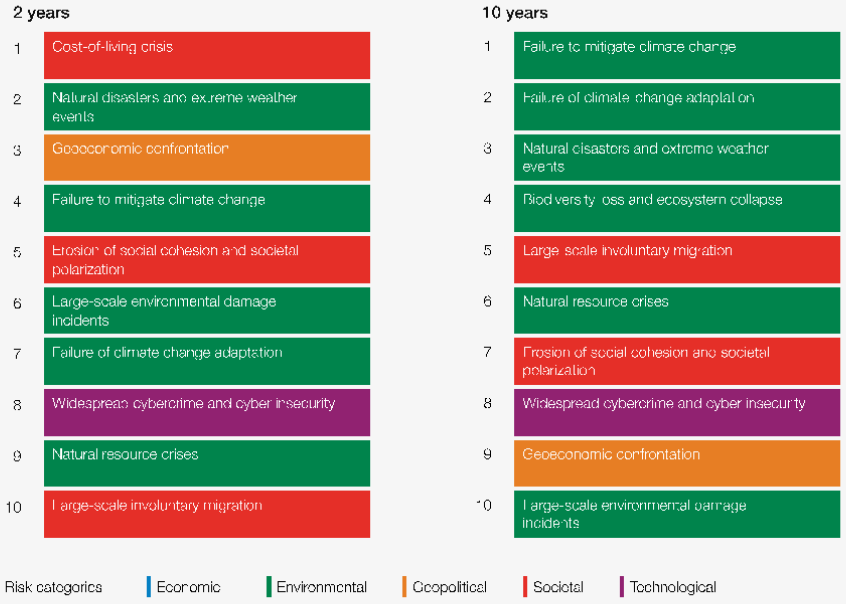
Source: World Economic Forum Global Risks Perception Survey 2023-2024.

2024

FIGURE A

Global risks ranked by severity over the short and long term

"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period"



Source

World Economic Forum Global Risks Perception Survey 2022-2023.

2023

How do we change this complex reality?
How do we overcome the “Grand Societal Challenges”?



Sustainable Transitions(STS)



- How do we change socio-technocal systems?
  – Incremental/Radical Innovations

Not Enough!

Unsustainable Production and Consumption Patterns in diferente Socio-Technical Systems

- Deep Transformations in societal functions (**mobility**, energy, food)
- STS main goal is to **discuss how radical change occur in order to fullfill societal functions**

Sustainable Transitions(STS)

But what does it mean “Sustainable”?



Unsustainable Production and Consumption Patterns in diferente Socio-Technical Systems

Sustainability in Business

- Different concepts and labels
  - Industrial Ecology (Ehrenfeld, 2004)
  - Cleaner Production (Kjarheim, 2005)
  - Green Economy (Loiseau et al, 2016)
  - Blue Economy (Smith-Godfrey, 2016)

- Different levels of analysis– **macro, meso e micro**

- **How to trabnslate those concepts in order to facilitate their adoption by organizations?**



Circular Economy

- Originary from practice and public policies
- In literature
  - Boulding, K. E. (1966). The economics of the coming spaceship earth. In *Environmental quality in a growing economy* (pp. 3-14). RFF Press.
  - Industrial Ecology (década de 1970)
- Industry / Public Policies
  - Industrial Ecology as Industrial Policy inChina (2008)
  - NGOs as Ellen MacArthur Foundation (2010)
  - National Policy for Solid Waste - BR (2011)

Circular Economy

*"**.... A way to help the transition to sustainable development "** (Ometto,Sarkis e Evans, 2024)*

Kirchherr et al (2023)

- Regenerative system that requires a paradigm shift replacing the concept of “end of life” with the **reduction, reuse, recycling and recovery** of materials through production chains, with the aim of promoting maintenance of value and sustainable development, **creating environmental quality, development economic and social equity**, for the benefit of current and future generations. It is made possible by an **alliance of stakeholders** (industry, consumers, public agents and academia) and their knowledge and technological innovations

In summary...

- Both STS and CE are at the theory development phase
  - Kohler et al (2019) – STS
  - Kirchherr et al (2023) – EC
  - Both areas need theoretical consolidation
    - Complex concepts, subject to contestation
    - *As many Other Applied social sciences, is it possible to achive consolidation?*
  - Kirchherr et al (2023) say that CE is a “ research field “
    - Shared concepts and beliefs; practical resources; authority, Community of actores”

In summary...

- CE is a complex, **essentially contested** concept (Gallie, 1956)
  - **But as a research field, we can have a minimum consensus to advance research**
- CE as a way to achieve sustainable development
- Transition to CE means Transition in Multiple Socio-technical systems **(Ometto, Sarkis and Evans, 2024)**

How to transition from Linear to Circular Economy?

My contribution– Research Projects

Technological Innovation and Sustainable Transitions in Urban Mobility

MOBILAB / GERPISA

Projetos de Pesquisa:

TRAJETÓRIA de INOVAÇÃO NA INDÚSTRIA AUTOMOTIVA NO BRASIL? UMA ANÁLISE SOB A PERSPECTIVA DO SISTEMA SOCIOTÉCNICO DE INOVAÇÃO (2011), CNPq 400573/2011

MOBILIDADE URBANA SUSTENTÁVEL E NOVOS MODELOS DE NEGÓCIO PARA INDÚSTRIA AUTOMOBILÍSTICA(2013) CNPQ Nr.479883/2013.

TRANSITIONS TO SUSTAINABLE MOBILITY – COMPARISON BETWEEN CHINESE AND BRAZILIAN INITIATIVES (2019) FLAUC, FUDAN University, China

WHO DRIVES THE CHANGE? TRANSITIONS TO SUSTAINABLE MOBILITY, THE ROLE OF AUTOMOTIVE INDUSTRY AND NEW BUSINESS MODELS (2020) , COFECUB

HOW DO WE GO BLUE? TRANSIÇÕES SOCIOTECNICAS E NÍVEIS INSTITUCIONAIS (2021) FAPESP

Circular Economy

Grupo Pesquisa/
KAN SCCP /
Mobilab / Gerpisa

Projetos Pesquisa:

REDUÇÃO DE INCERTEZA NO FORNECIMENTO EM CADEIAS DE SUPRIMENTO FECHADAS. CNPq, 2018

TRANSIÇÃO PARA ECONOMIA CIRCULAR NO GLOBAL SOUTH: O PAPEL DAS INOVAÇÕES EM MODELOS DE NEGÓCIO. CNPq (Bolsa Produtividade, 2024)

Unravelling the role of necessity-driven circular business models for an environmentally and socially just transition to circular economy. (Proposta em elaboração FAPESP/ESRC)

Main Results

Technological Innovation and Sustainable Transitions in Urban Mobility

MOBILAB / GERPISA

1.Exploring scenarios for the possibility of developing design and production competencies of electrical vehicles in Brazil (IJATM, 2013)

2.Spatial Contexts and Firm Strategies: Applying the Multilevel Perspective to Sustainable Urban Mobility Transitions in Brazil (JCP, 2015)

3.Quem dirige a mudança? Transições para Mobilidade Sustentável e o papel da Indústria Automotiva (Tese LD)

4.Barriers and drivers to implement innovative business models towards sustainable urban mobility. (IJATM,2022)

5.Meso-institutions as Systemic Intermediaries in Sustainable Transitions Governance. (EIST, 2024)

Circular Economy

Grupo Pesquisa/
KAN SCCP /
Mobilab / Gerpisa

1. Circular economy supply network management: A complex adaptive system. (2022) IJPE

2. The puzzle of the informal economy and the circular economy. (2022) RCR

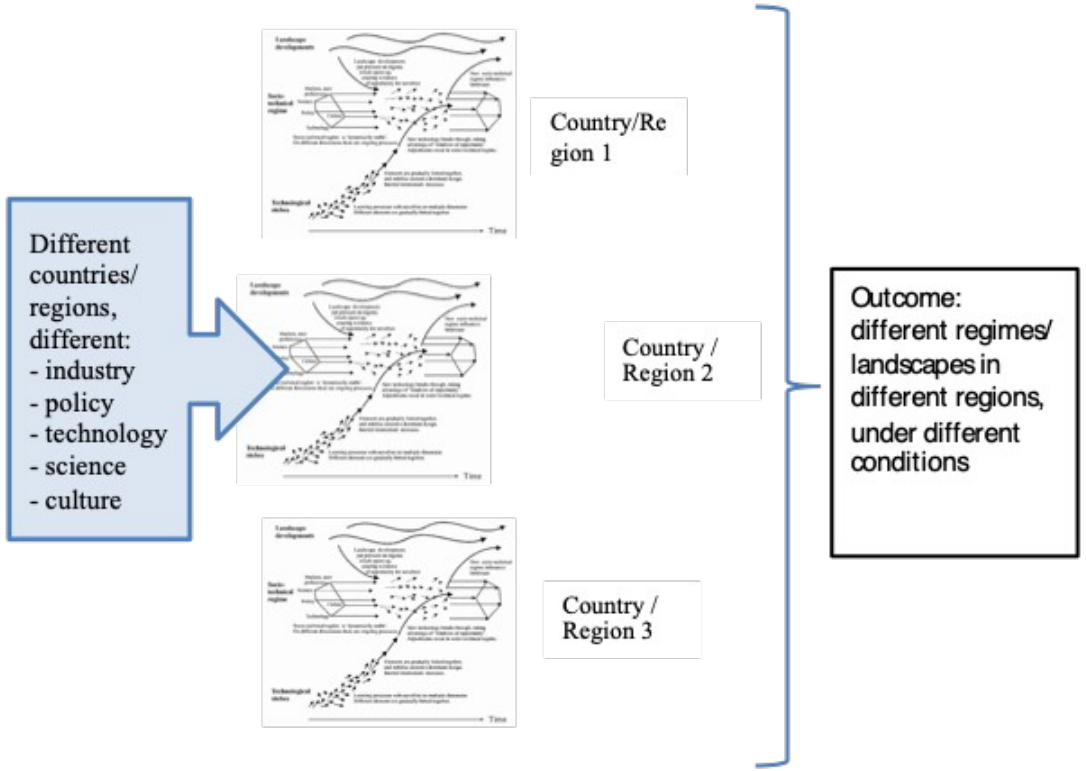
3. Circular ecosystem management: Orchestrating ecosystem value proposition and configuration.(2023) IJPE

4. Circular Business Models in Automotive Industry. (2023) NBM Conference

5. Managing Circular Ecosystems in Imperfect Contexts - The case of extractive fishing in the Brazilian Amazon Region RAUSP (2024)

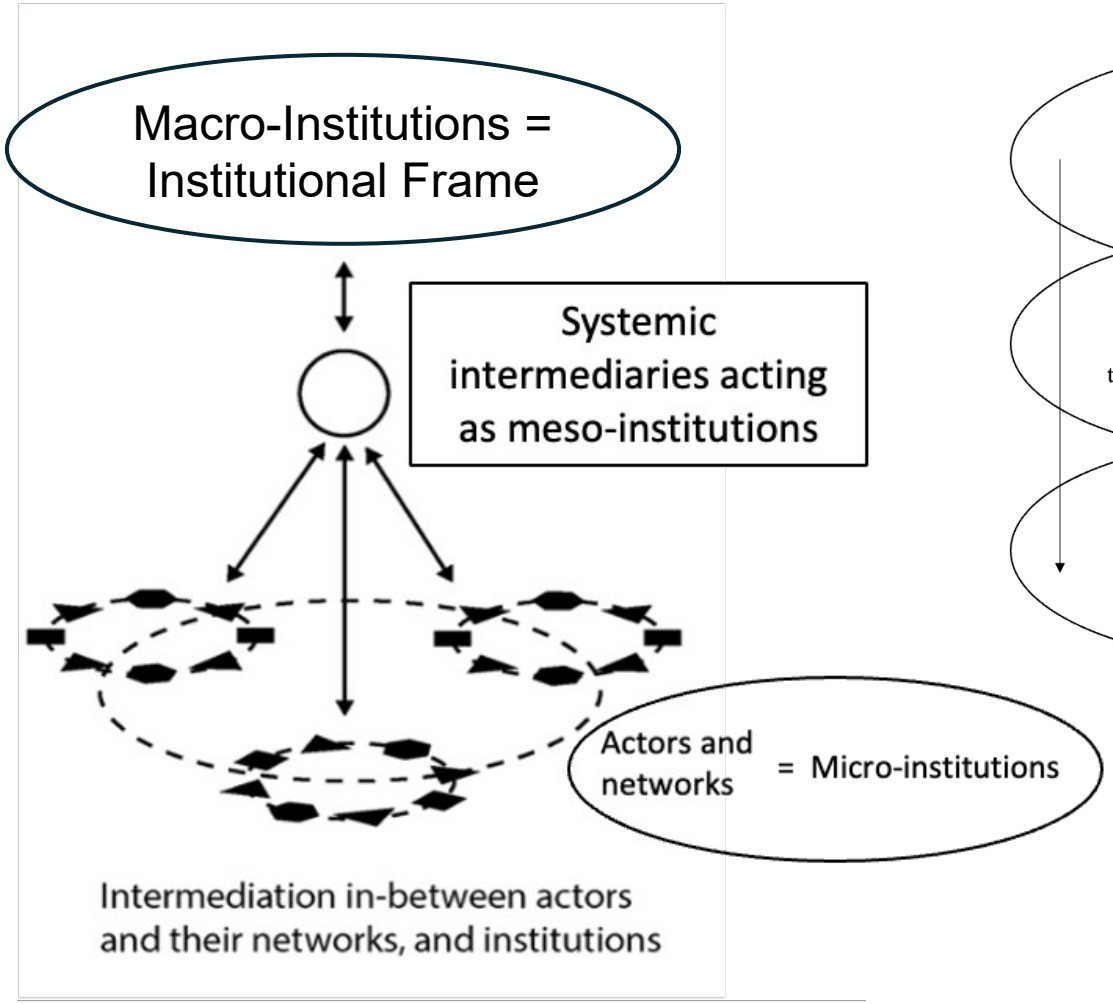
1. Different Transitions in Different Contexts

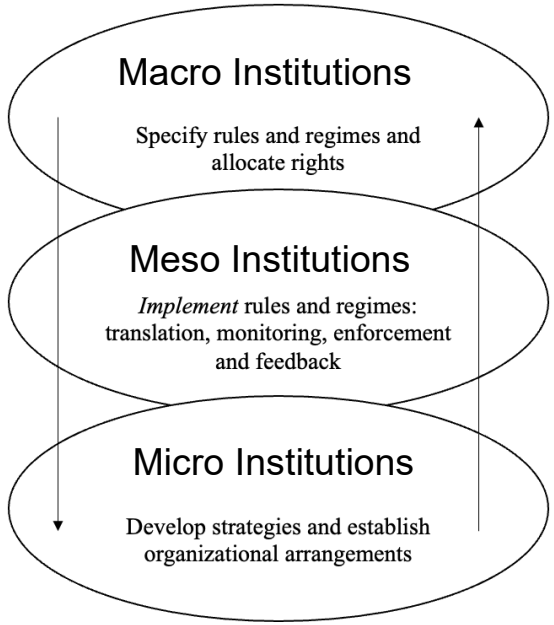
STS - Limits and critiques to MLP



Marx et al. (2015)
Spacial contexto in alignment and co-Evolution in STS
Different trasition paths in diofferent conetxt
GAPS: **Governance/ industry role**

2. Governing Transitions - role of intermediaries



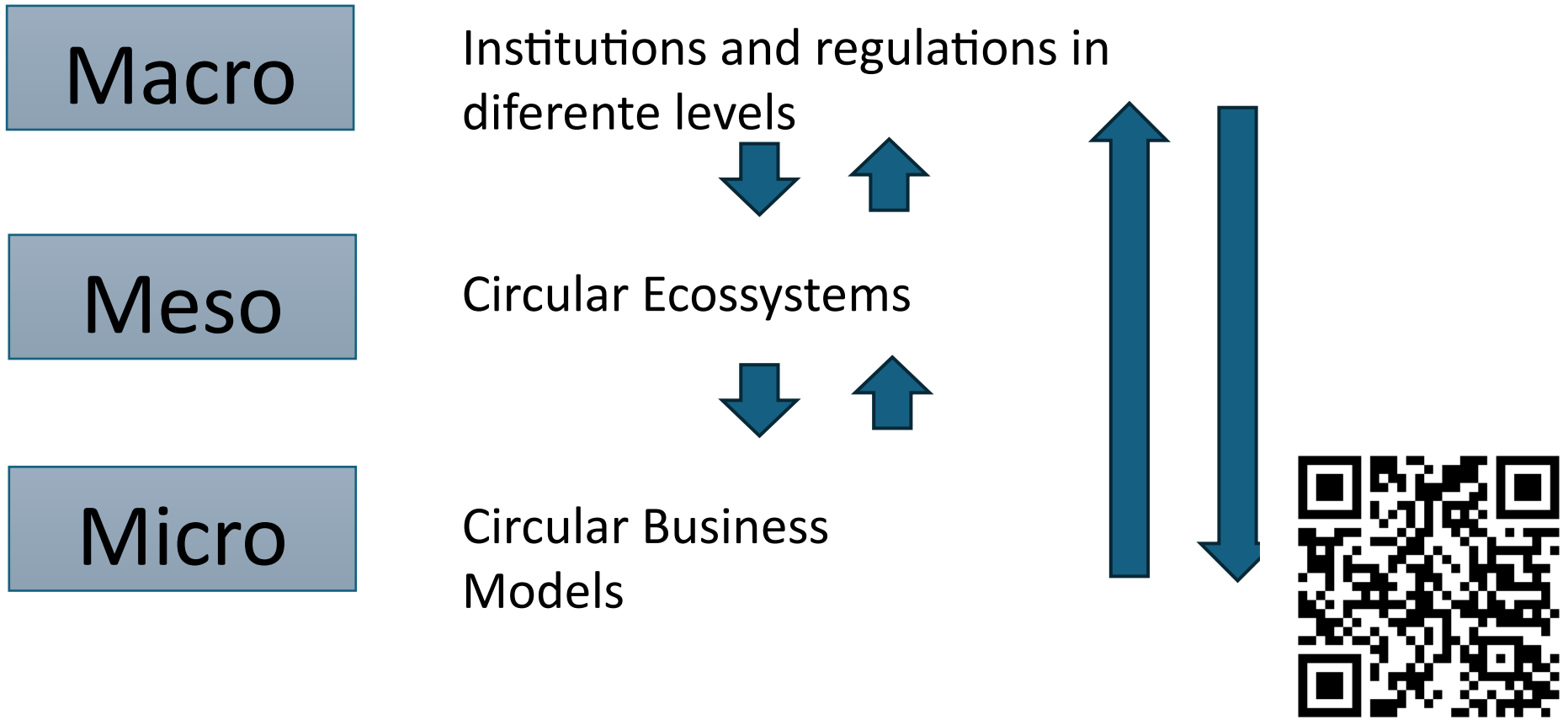


PROCONVE

ANFAVEA
Cetesb

Ind.Automotiva

3. Understanding Circular Economy



Braz e Mello, 2022

4. Transitions to Circular Economy

- Current Linear Production And Consumption Systems are a colection of Socio Techincal Regimes
- Paradigm Shift
  - **From CE IMPLEMENTATION**
  - **To** TRANSITION from LINEAR TO CIRCULAR Production Systems
  - Circular Business Models as Niches that challenge Linear regimes

- Research in EC must indicate new potential solutions and not only reframe current production systems
- Acknowledgement that this transition won’t have a single model – it depends upon regions/countries
  - Global South – economic necessity driven
  - Global North – driven by regulations and technological development









Muito Obrigada!

谢谢

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