

Green Transformation in the G20

Divergent Pathways for the G7 and BRICS

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Special Session 1D: Post-Schumpeterian Economics

The Global Paradox

We stand at a critical juncture defined by two opposing forces:

- **The Schumpeterian Engine:** Unprecedented progress driven by AI and digitalization.
- **The Ecological Crisis:** Escalating threats to the foundations of human existence (Georgescu-Roegen).

*How can we reconcile innovati**o**ned growth with long term planetary security?*



Post - Schumpeterian Economics (PSE)

Legacy of NSE

Traditional Neo-Schumpeterian Economics(NSE) focused on quantitative growth and industrial dynamics, often treating environmental factors as externalities.

The PSE Shift

PSE integrates **ecological responsibility** into the core economic engine. It reframes "Social Costs" not as externalities, but as central constraints.

The Transformation

Moving from a "Brown Economy" (fossil-fuel dependent) to a "Green Economy" (innovation-led sustainability).

Data Strategy & Methodology

This analysis relies on a **comprehensive, replicable dataset** utilizing Open Data sources, as detailed in the Appendix.

Data Sources:

- Economic Growth & Emissions: *World Bank Open Data, OECD*
- Innovation (Patents): *EPO (Y02 Class), USPTO*
- Green Finance: *Climate Bonds Initiative, IMF*

Method: Hierarchical Cluster Analysis to identify structural archetypes among G20 nations.



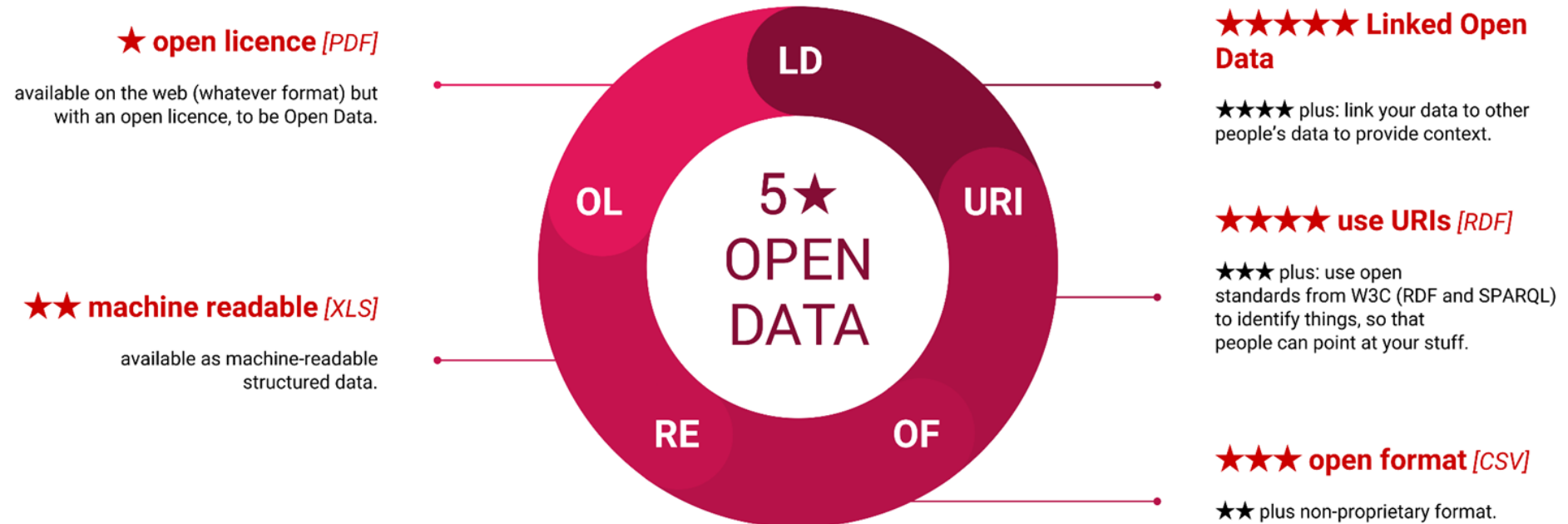
The Potential of Open Data

Leveraging Open Data is a strategic shift for economic science, fostering inclusivity and transparency:

Democratization of Research: It removes financial barriers, enabling researchers from the Global South to bypass expensive proprietary databases.

Transparency & Trust: It ensures that policy recommendations are based on replicable, verifiable evidence.

Multi -Dimensionality: Fusing distinct open sources (e.g., Patent data + CO2 metrics) reveals structural realities.



Global Landscape: Three Archetypes

1. High Growth / High Emission

USA, China, India

Characterized by rapid innovation and scale, but struggling with massive carbon footprints and "brown" legacy infrastructure.

2. Resource Dependent

Russia, Saudi Arabia, South Africa

Economies structurally locked into fossil fuel extraction.

Transformation faces high economic barriers.

3. Advanced Decouplers

UK, France, Germany, Japan

Lower emissions per GDP.

Transformation is driven by policy efficiency and regulation, but growth is slower.

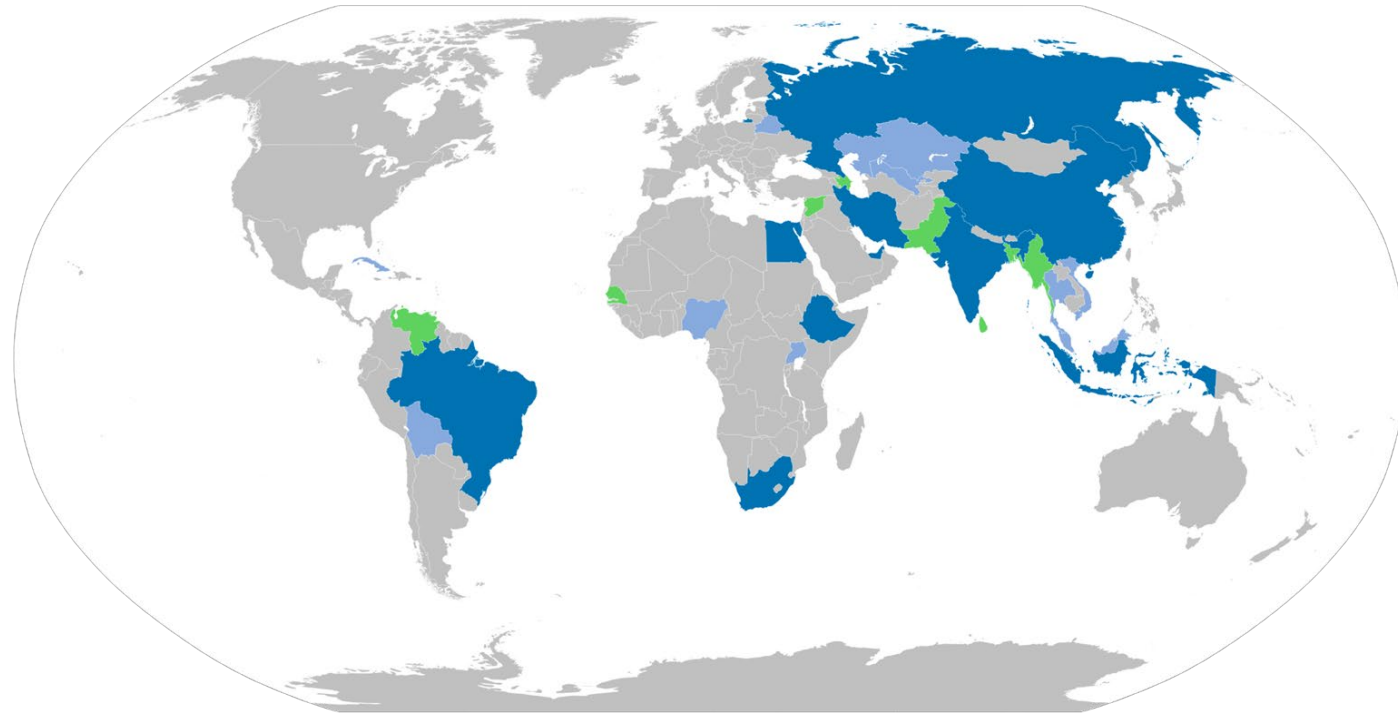
G7: Divergent Pathways

Contrary to the assumption of a unified "Western" block, our data reveals a sharp divergence within the G7:

- **The US Model ("High-Stakes Innovator"):**
Innovation-led, market-driven with massive subsidies (IRA). High risks, high rewards, but high emissions.
- **The EU/Japan Model ("Balanced Transformer"):**
Policy-led, regulatory focus. Prioritizes efficiency and social stability over disruptive speed.



BRICS: Profound Heterogeneity



BRICS is a geopolitical label, not a coherent economic cluster for green transition.

- **China:** A "Mega-Innovator." Matches the US in patent volume but retains the emissions profile of a developing giant.
- **Resource Dependent (e.g., South Africa):** Facing profound structural barriers. The exit from the carbon economy is an existential economic challenge.
- **Conclusion:** "One-size-fits-all" policies for the Global South will fail.

The Innovation Hierarchy

Analysis of Green Patents (Y02 Class) reveals a stratified global system:

1. **Tier 1: The Leaders**

USA, Japan, China, Korea. They define the technological frontier.

2. **Tier 2: The Specialists**

Germany, France, UK. Strong in specific niches (e.g., smart grids).

3. **Tier 3: The Adopters**

Most other G20 nations depend on technology transfer.



Conclusion & Policy Implications

No Single Quest

Global transformation is defined by distinct national archetypes, not a singular path.

Supervised Positive Sum

Successful transition requires governments to actively guide innovation (Supervising State), moving beyond mere market correction.

Tailored Cooperation

International support must be customized. Resource-dependent economies (like South Africa) require specific transition mechanisms distinct from industrial innovators.