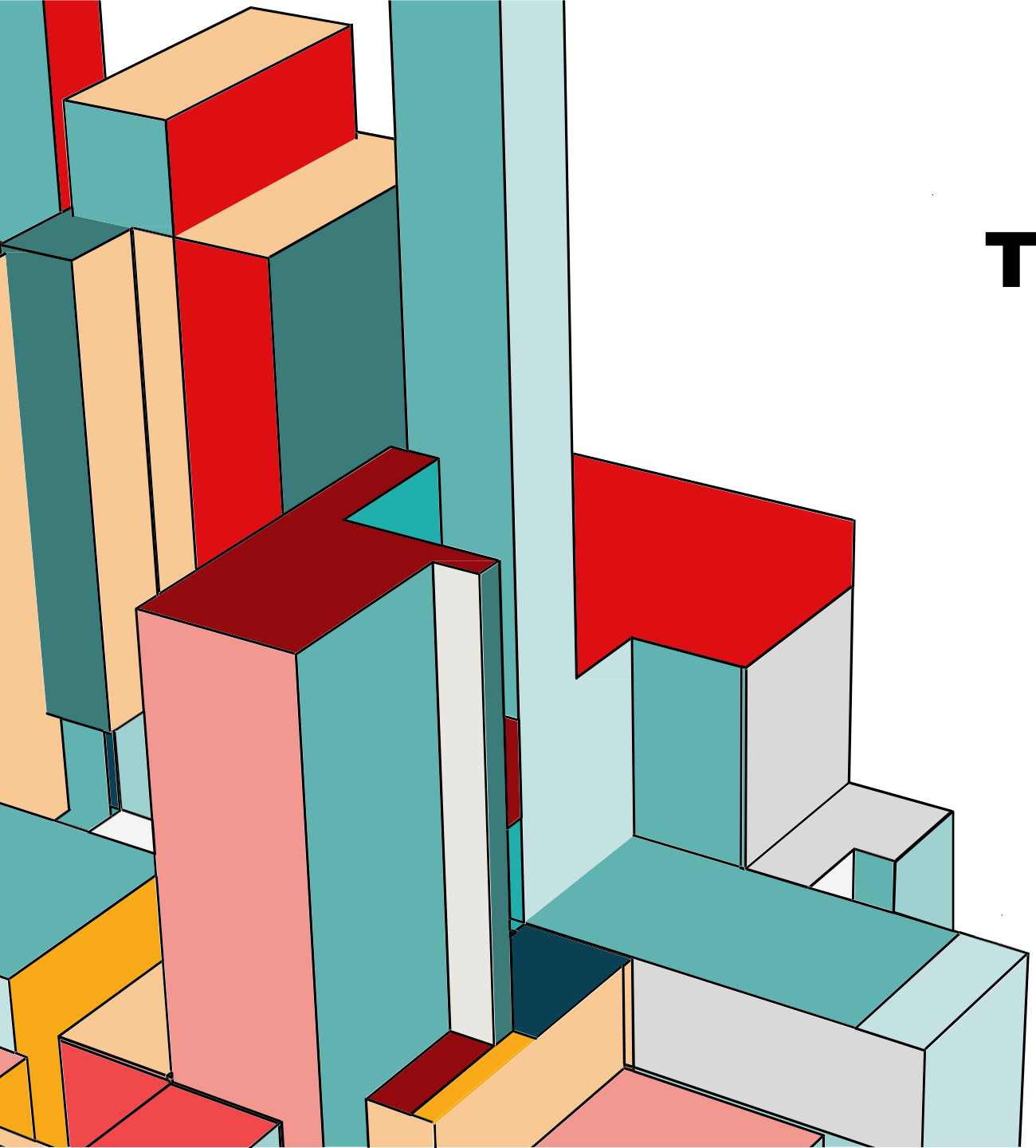


THEORETICAL BUILDING BLOCKS: Energy & Communities

Kaya Schwemmlein

11/10/2026

ENGENHARIA DA ENERGIA E AMBIENTE

Energy Transition: European and Portuguese Objectives

- **2030**:a 55% reduction compared to 2005 levels, as set out in the Climate Framework Law and the National Energy and Climate Plan (PNEC 2030).

There is a focus on increasing the use of renewable energy, with a binding target of 42.5% for its share in gross final energy consumption by 2030.

- **2035**:

Restriction on the sale of new light-duty vehicles powered exclusively by fossil fuels.

- **2040**:

90% reduction in GHG emissions compared to 1990 levels.

Ban on the use of fossil natural gas for electricity production from 2040, provided that security of supply is ensured.

2045 (PT):

Aware of the challenges and opportunities associated with this transition, Portugal made a commitment at COP 28 to bring forward its climate neutrality target to 2045.

2050:

Achieve carbon neutrality by 2050 (2005).

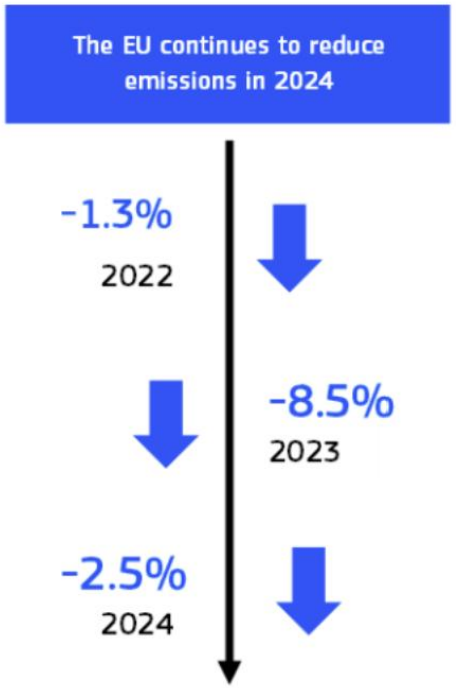


Table 2: Total net domestic GHG emissions (including LULUCF)

	$MtCO_2$-eq	% change	% average annual change		
	1990	1990-2024	1990-2005	2005-2023	2023-2024
Portugal	63	-19%	2.4%	-3.1%	**0.5%**

https://climate.ec.europa.eu/areas-action/climate-strategies-targets/progress-climate-action_en

Renewable energy accounted for 35.2% of gross final energy consumption (GFEC), up 0.5 percentage points from 2022

Portugal ranks 7th among the EU-27 countries in terms of the share of energy from renewable sources (RES) in GFEC.

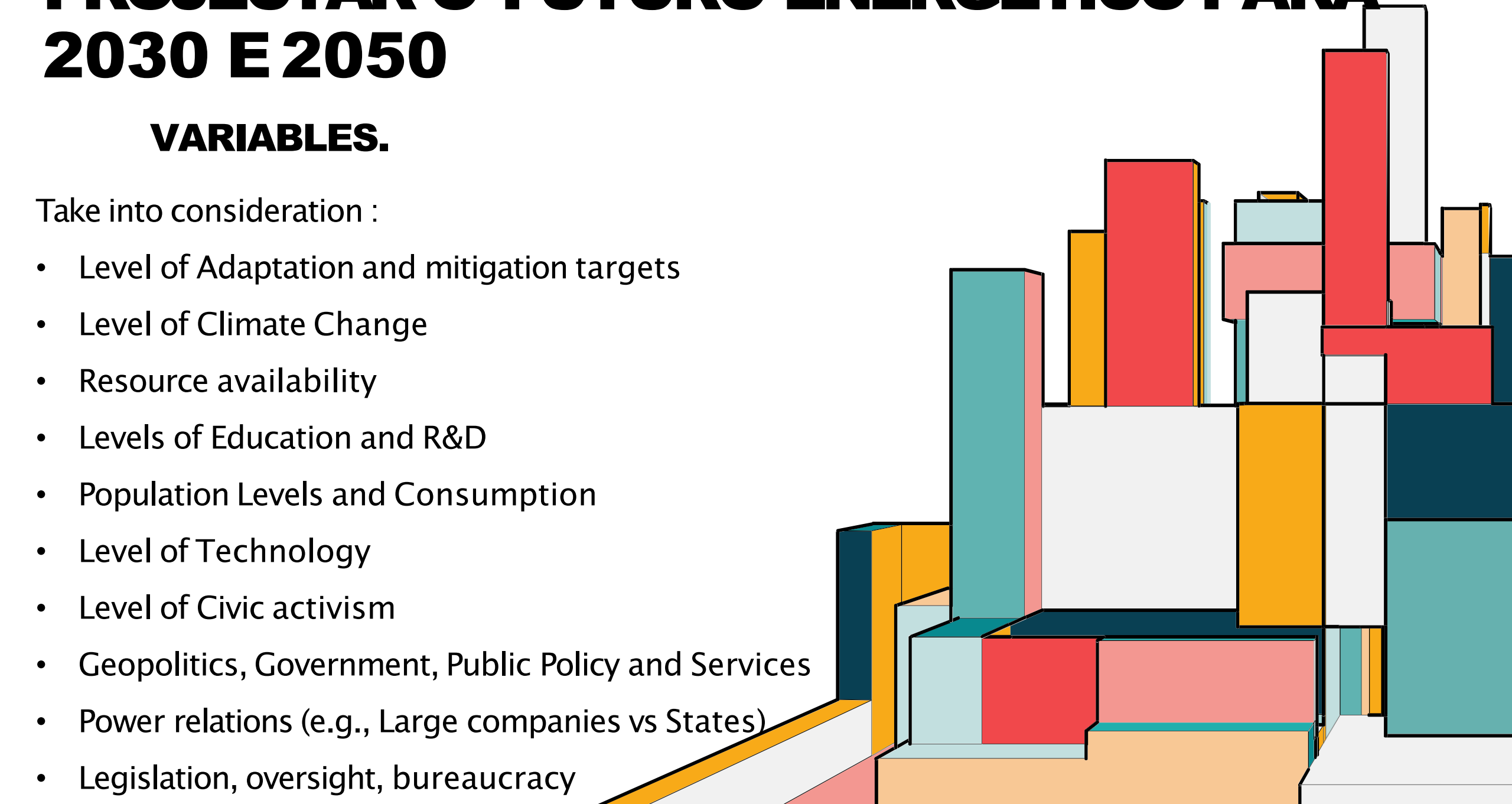


PROJECTAR O FUTURO ENERGÉTICO PARA 2030 E 2050

VARIABLES.

Take into consideration :

- Level of Adaptation and mitigation targets
- Level of Climate Change
- Resource availability
- Levels of Education and R&D
- Population Levels and Consumption
- Level of Technology
- Level of Civic activism
- Geopolitics, Government, Public Policy and Services
- Power relations (e.g., Large companies vs States)
- Legislation, oversight, bureaucracy



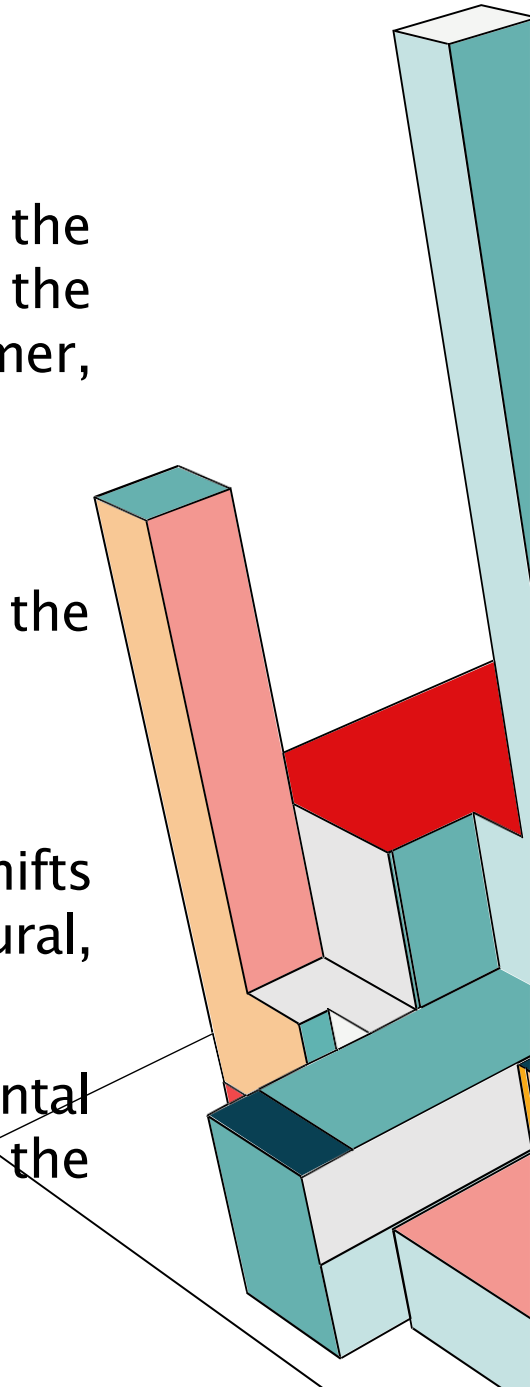
10 min break

CLIMATE CHANGE & THE "CENE" TURN

- Due to the magnitude of human imprint on the global environment, the atmospheric chemists P. Crutzen and E. Stoermer popularised, in the year 2000, the development of a new geological epoch: the Anthropocene (Crutzen & Stoermer, 2021).

- Human action on Earth is a global geophysical force comparable to some of the great forces of nature (Zalasiewicz et al. 2011).

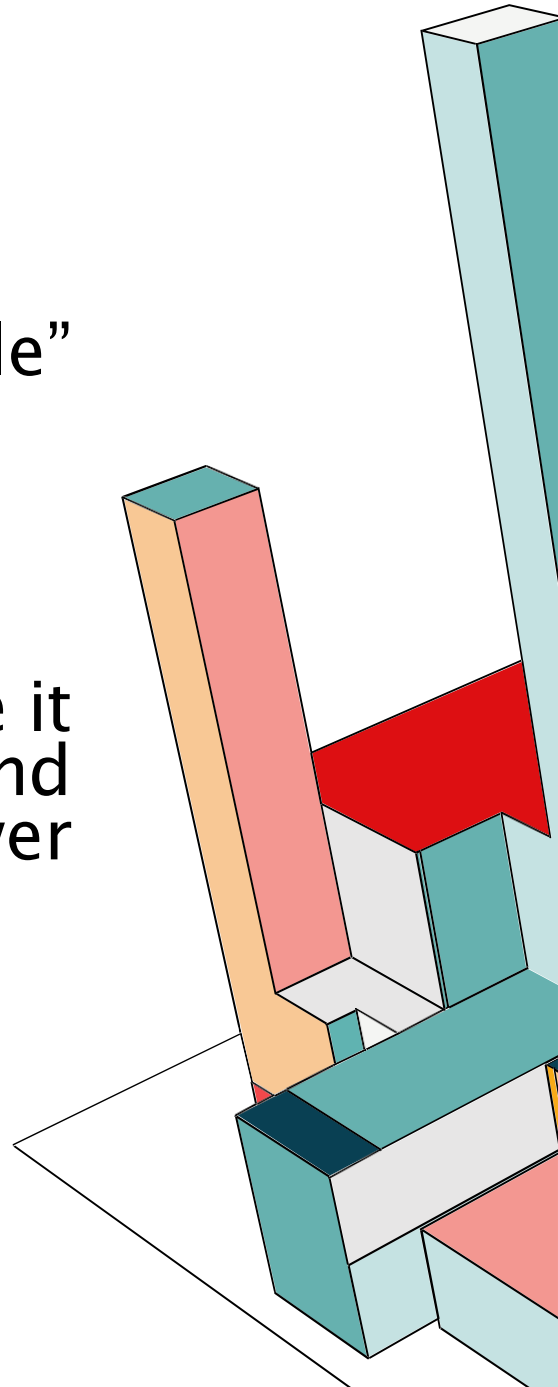
- Anthropogenic climate change, broadly defined as alterations and long-term shifts in the climate regime caused by human activity, including industrial, agricultural, and resource management (Perdigão & Schwemmlein, 2020).
- Continues to be presented as a solid foundation for the field of environmental science, although its use has been contested (Dunlap, 2024) and rejected by the International Union of Geological Sciences.



CAPITALOCENE

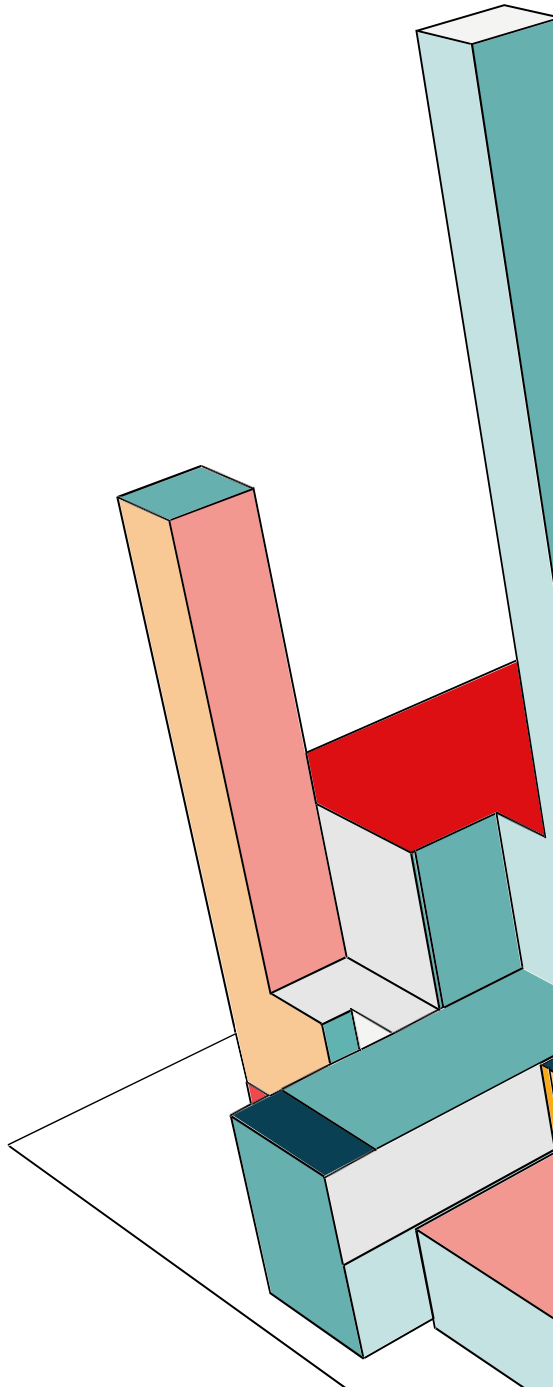
- Critic: “Anthropos: Humanity as an undifferentiated whole” (Moore, 2015, p. 173).

- “The Anthropocene makes for an easy story. Easy, because it does not challenge the naturalised inequalities, alienation, and violence inscribed in modernity’s strategic relations of power and production” (Moore, 2015, p. 173).



THE "CENE" TURN

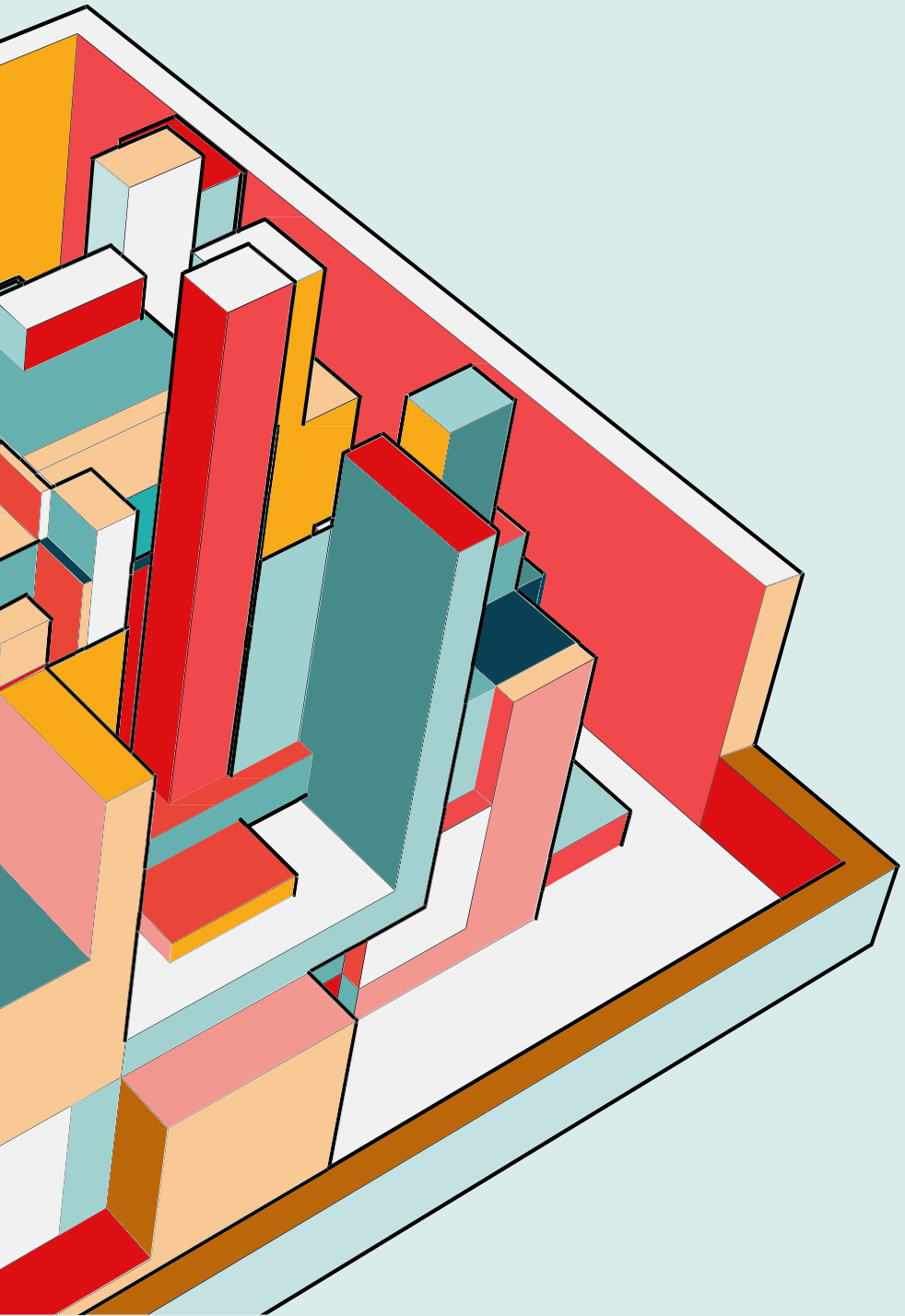
- Mantropocene (Raworth, 2014)—focus on gender bias and patriarchy.
- Technocene (Hornborg, 2015)—technoscientific industrial extractivist destructive logic of capitalism.
- Chthulucene (Haraway, 2015)—interspecies relationships and the active role that centralising non-humans can play.
- Plantationocene (Haraway, 2015)—focus on colonialism and race in industrial plantations systems.
- Plutocene (Solón, 2019)—concentration of power in a small number of people.
- Wasteocene (Armiero, 2021)—othering of peoples and places; creation of toxic ecologies; contamination of *materials* and *narratives*.



(…) environmental problems cannot be decoupled from histories of colonialism, capitalism, and racism that have made some human beings more vulnerable than others to warming temperatures, rising seas, toxic exposures, and land dispossession occurring across the globe (Moore et al., 2019, p. n.d.).

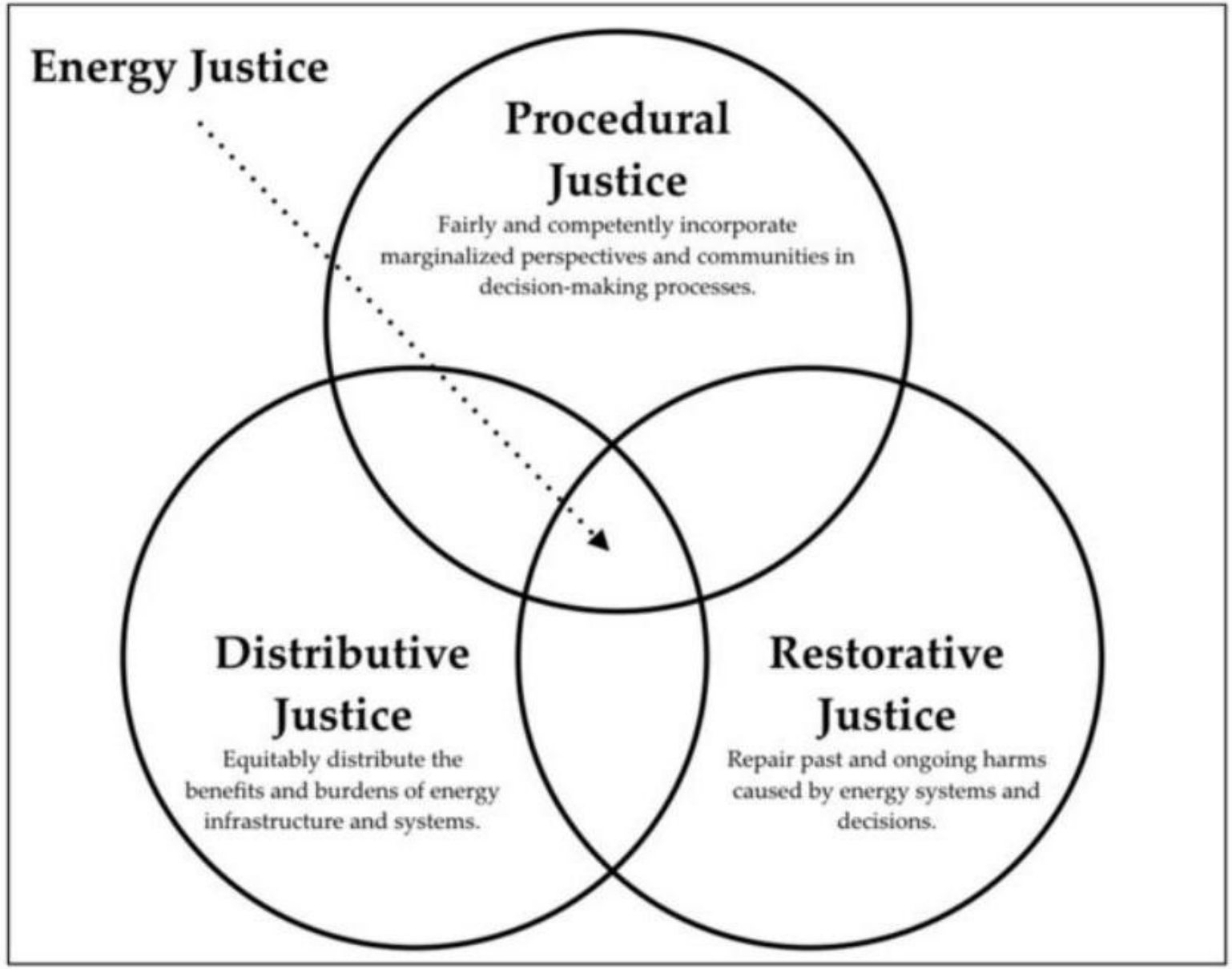


Source: Polyp, with authorization of the author.



ENERGY JUSTICE & SUSTAINABLE COMMUNITIES

- A global energy system that fairly disseminates both the benefits and costs of energy services.
- Attaining equity in social and economic participation in the energy system.
- Answers the Question: How can justice theory help people make meaningful decisions about the production, delivery, use, and impacts of energy?



WALLSGROVE ET. AL. 2021

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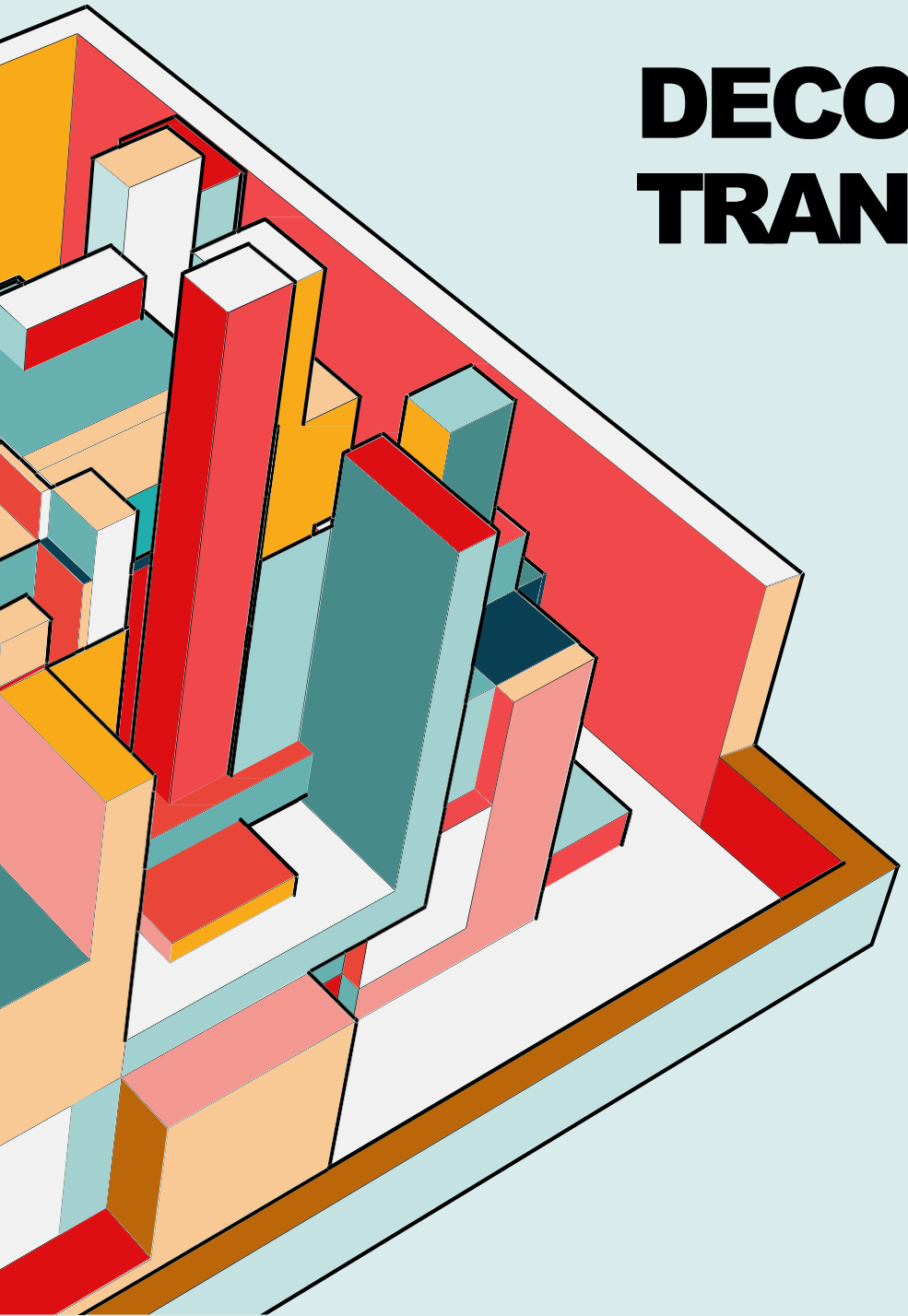

DECOLONIAL ENERGY TRANSITION

- Addresses historical injustices and power imbalances stemming from colonialism.
- Dismantle colonial legacies embedded in current energy infrastructures.
- Energy policies and practices that prioritize the rights and needs of marginalized communities, ensuring equitable access to sustainable energy resources.
- Promotes self-determination and community ownership in energy production and distribution.

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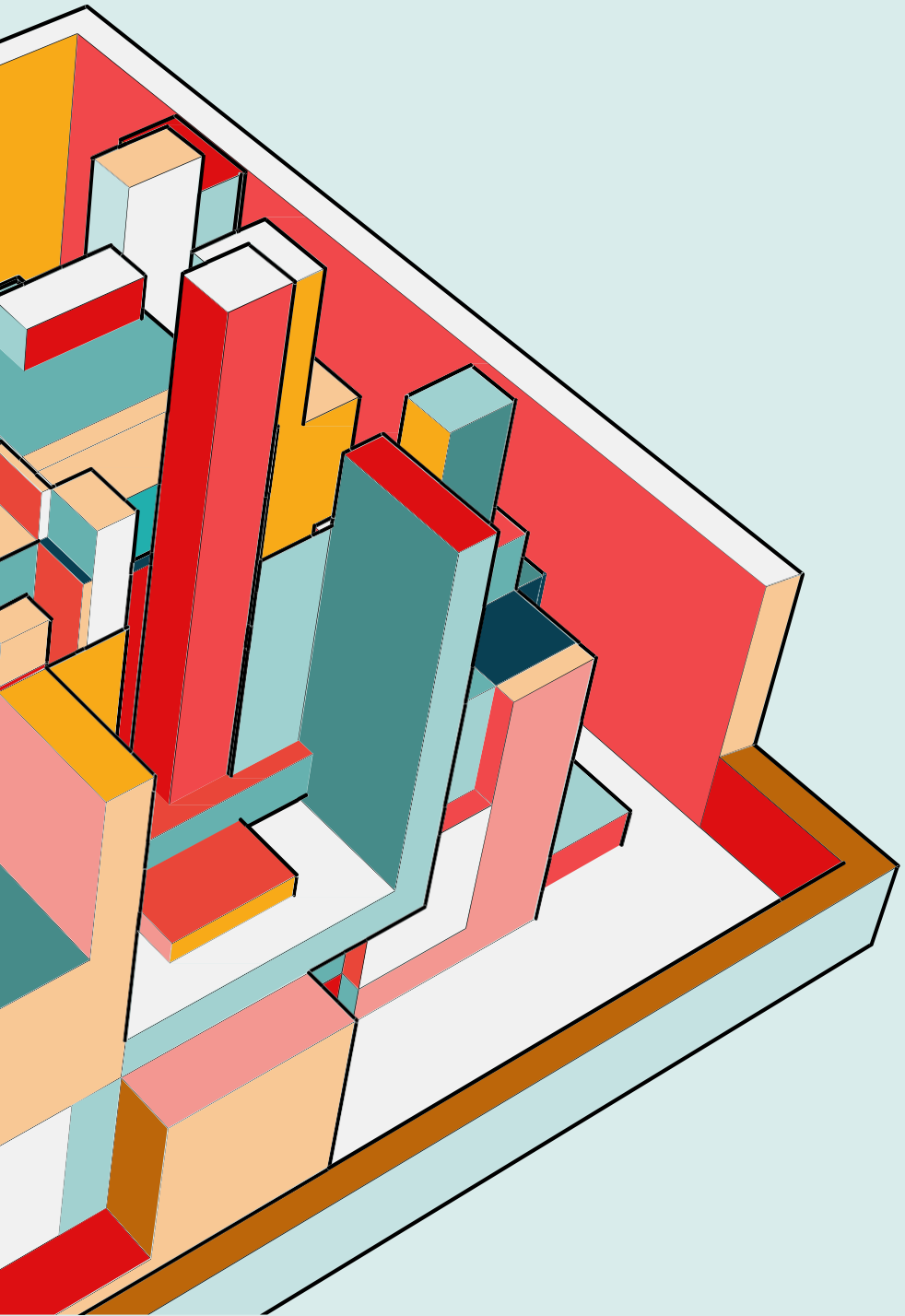

SOCIAL ACCEPTANCE OF RENEWABLE ENERGY TECHNOLOGY

- Answers to the question: Why changes to energy systems are accepted or resisted in different ways in different geographical contexts.
- Three dimensions (community, socio-political, and market).

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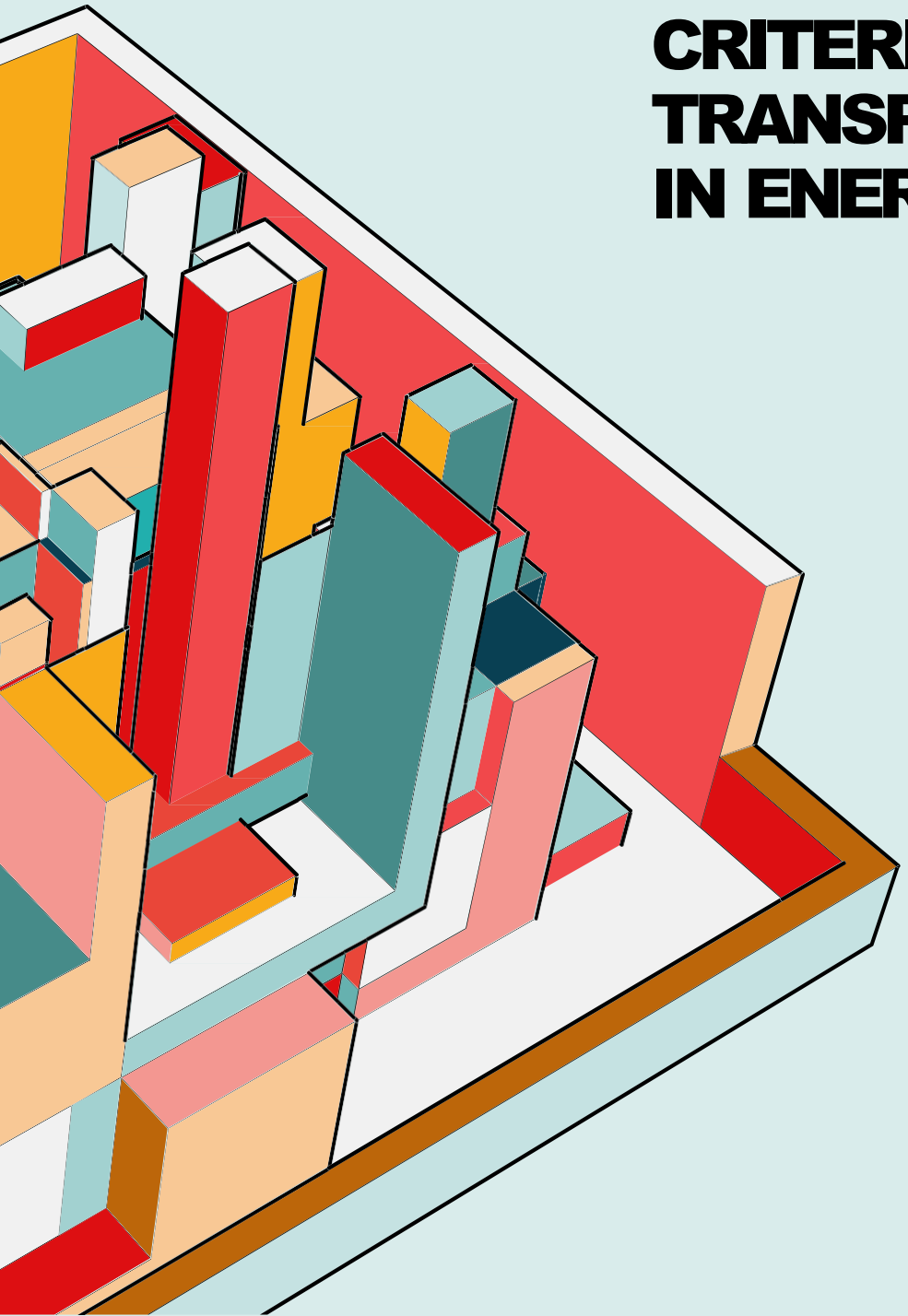

CRITERIA & BEST PRACTICES FOR TRANSPARENCY & COMMUNITY PARTICIPATION IN ENERGY PROJECTS

- Community Engagement & Developers Transparancy
- Diverse Types of Knowledge
- Community Led Energy Projects

- Firestone, J., Hoen, B., Rand, J., Elliott, D., Hübner, G., & Pohl, J. (2018). Reconsidering barriers to wind power projects: community engagement, developer transparency and place. *Journal of environmental policy & planning*, *20*(3), 370-386.
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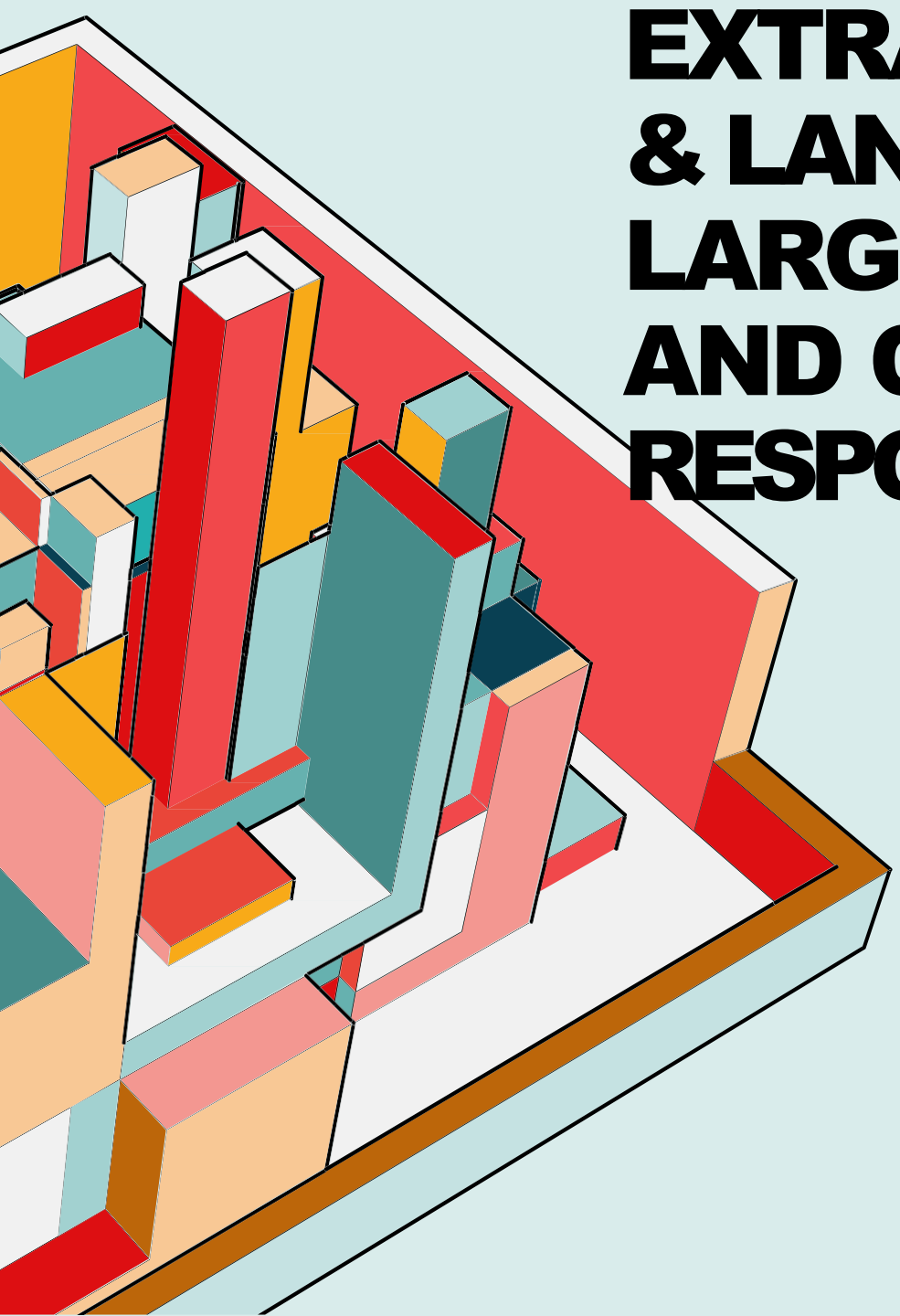

EXTRACTIVISM/ ENVIRONMENTAL & LANDSCAPE IMPACTS OF LARGE-SCALE ENERGY PROJECTS AND COMMUNITY RESPONSES

- Extraction, expropriation, and transfer of rights from rural poor (e.g., marginalized farmer communities, indigenous, migrant workers), in favor of external accumulation, mostly private TNCs.
- Extractivism forms a complex ensemble of self-reinforcing practices, mentalities, and power with a focus on destructive modes of organizing life through subjugation, violence, depletion, and non-reciprocity.
- Has expanded beyond mining and fossil fuel extractivisms, to agrarian or agro-extractivisms of different types, including forestry extractivism (Chagnon et al 2022)

- Dunlap, A., Verweijen, J., & Tornel, C. (2024). The political ecologies of “green” extractivism(s): An introduction. *Journal of Political Ecology*, *31*, 1–28. https://doi.org/10.2458/jpe.6131
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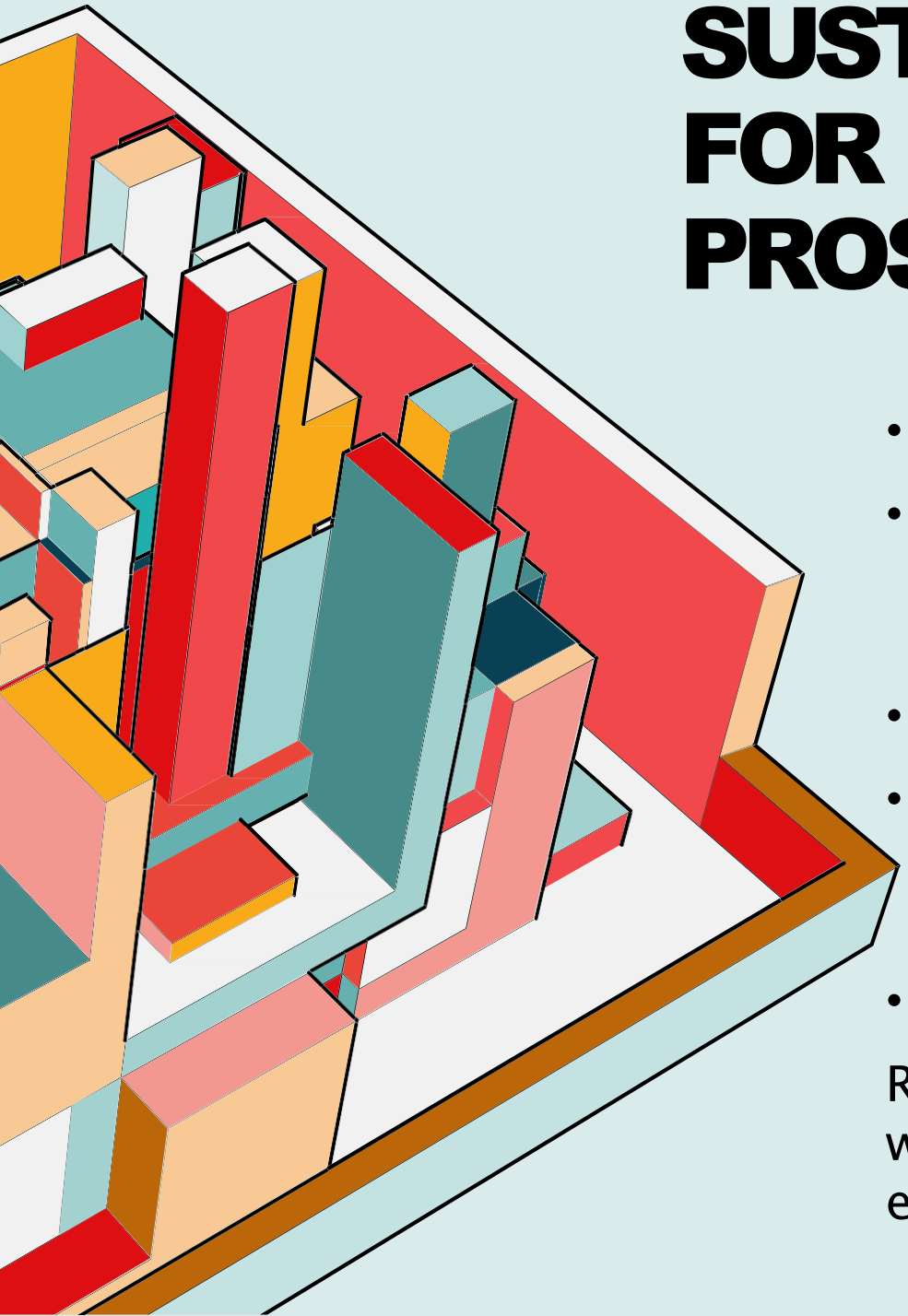

SUSTAINABLE BUSINESS PLANS FOR COMMUNITY ENERGY AND PROSUMER PROJECTS

- Energy Sovereignty:
- self-sufficiency/community's autonomous capacity to meet its energy needs, gain control over its energy resources and infrastructure, and ensure long-term sustainability.
- Energy Democracy:
- Dimensions include democratic control of the energy sector, the redistribution of political and economic power, the universal right to renewable energy, and social justice.
- Renewable Energy Communities:

Renewable Energy Communities are made up of prosumers, who generate and use energy, and consumers, who consume energy.

- Kristiina Korjonen-Kuusipuro, Maija Hujala, Satu Pätäri, Jukka-Pekka Bergman, Laura Olkkonen. (2017). The emergence and diffusion of grassroots energy innovations: Building an interdisciplinary approach,. Journal of Cleaner Production. https://doi.org/10.1016/j.jclepro.2016.10.047.
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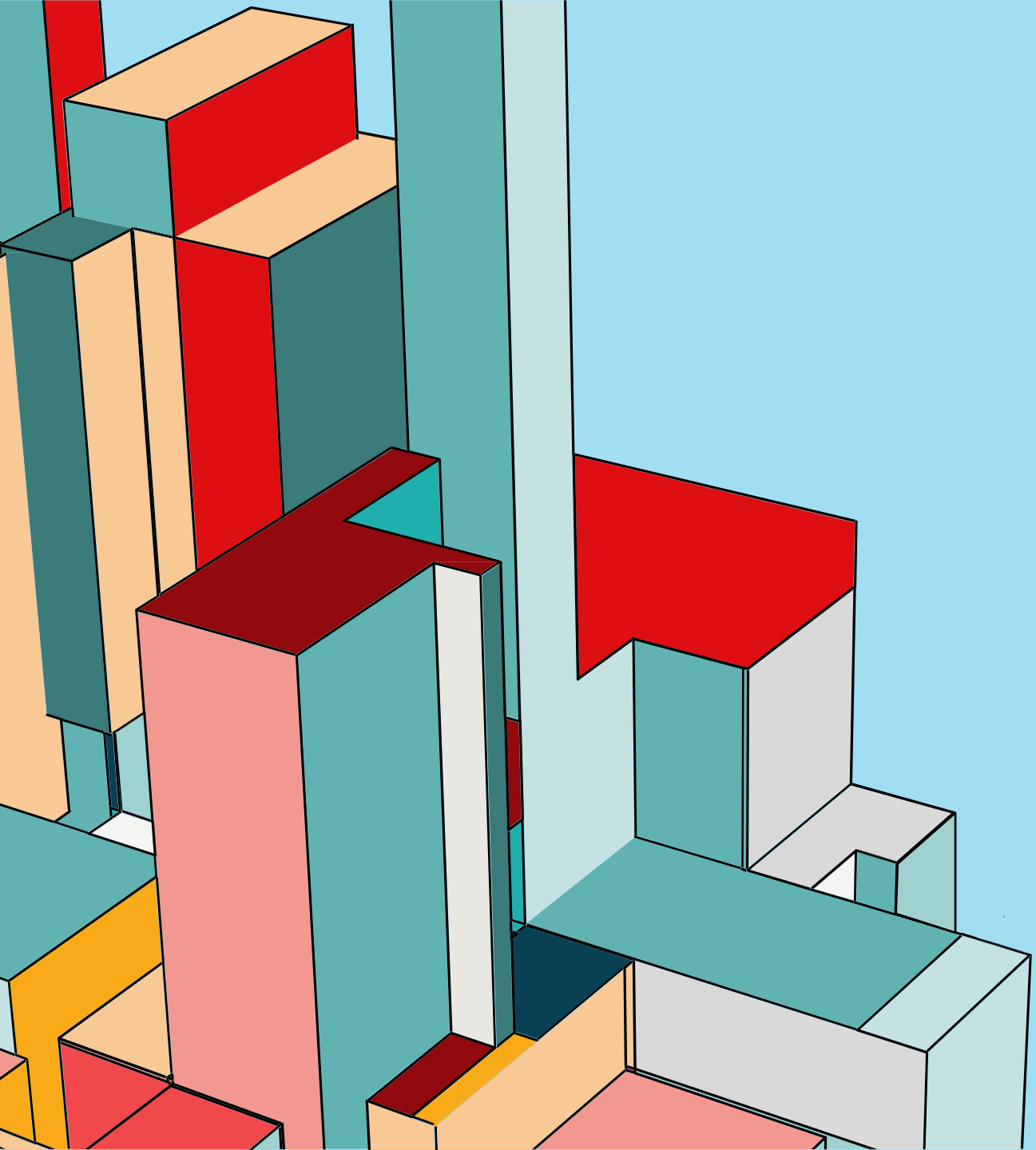

OBRIGADA!