Wuppertal Institut

Centre for Systems Solutions

Just Energy Transition in Coal Regions

Tales of Carbonia – A social simulation

Empowering Collaboration and Understanding for a Just Energy Transition

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Introduction

As part of the research project "IKI JET – Innovation Regions for a Just Energy Transition" researchers at the Wuppertal Institute and the Centre for Systems Solutions developed the simulation game "Tales of Carbonia". The simulation promotes mutual understanding and learning between the different stakeholders involved in Coal Phase-out and the Just Energy Transition process and encourages players to look beyond their own horizons.

Social simulations are designed to help participants explore complex negotiation processes and understand both the intended and unintended consequences of transformation efforts. By stepping into the roles of other stakeholders, participants gain valuable insights into these processes from alternative perspectives and learn about the challenges involved in Just Energy Transitions. These simulations promote mutual understanding among stakeholders by making their diverse perspectives more tangible.

Collaboration is key

The simulation game aims to transition the energy system in the fictional world of “Carbonia” from coal to renewable energy sources while also improving the quality of life. This is not an easy task as Carbonia's economy is heavily based on fossil fuels. While poor decisions could lead to unemployment or mass migration from the region, the right ones could unlock a brighter future for all. By working together constructively despite their sometimes conflicting interests, stakeholders can make a real impact. Building on the Wuppertal Institute's long-standing research in coal regions and a collaborative process with stakeholders and experts on the Just Energy Transition in Colombia and Indonesia, the game incorporates specific challenges and barriers faced by coal-dependent regions into the simulation. The simulation was developed with the input of experts and local stakeholders in order to encompass a wide range of perspectives on the transition processes taking place in the target regions and the actors involved.

Solutions for real-world problems: How the three steps of social simulations (co-design, performing the simulation and debrief) fit into stakeholder-based processes. (Graphic designed by Centre for Systems Solutions)

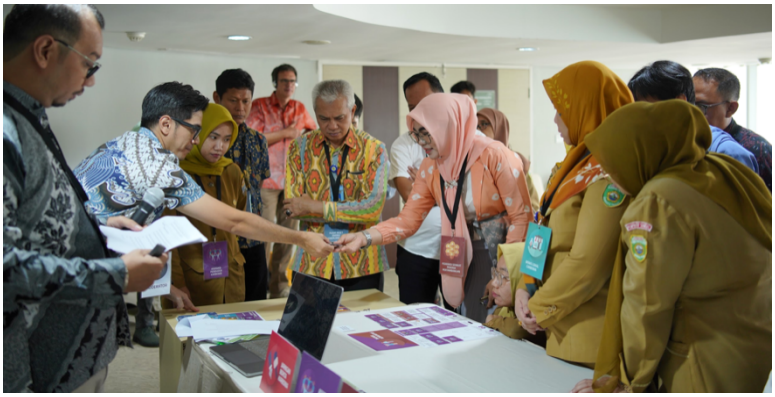
The participating experts provided insights on general challenges and opportunities of the just transition process in the regions, that should be taken into account when designing and implementing the social simulation. They also identified possible challenging factors that could hinder active player engagement, as cultural or social barriers. Furthermore, they served as multipliers, facilitating the establishment of contacts with key stakeholders.

Based on the insights gained, an initial prototype was designed, which was further developed in various test runs with a focus on fine-tuning game mechanics, content aspects and complexity. Stakeholders were able to test the simulation to verify that their negotiating positions, opportunities and restrictions were accurately reflected.

How the simulation works

The simulation game can be conducted either in person or online, guided by a skilled facilitator. It is flexible and can be tailored to address country-specific challenges and the unique dynamics of participant interactions and roles. This adaptability enables participants to apply the insights and experiences gained during the simulation directly to real-world negotiation scenarios in their respective regions. The co-designing process

allows the simulation to closely reflect reality while also reducing complexity, making it easier to identify the impact of different participants' actions.



Playing the Simulation in Palembang – Indonesia (Photo: Hermand Barker)

The game enables a change of perspective: a real-life trade union representative can take on the role of a Carbonian coal company CEO, while a government official can slip into the role of an environmental activist. In their new roles, the participants act and negotiate with each other based on their role descriptions, accessible resources and available capital. The participants gain direct experience of the conditions and limitations faced by stakeholders, as well as the consequences of their own decisions. Following the simulation, they reflect on how the fictional scenario connects to real-world challenges—and, most importantly, explore ways to achieve improved outcomes for society, the environment, and the climate in the real world.

The Tales of Carbonia takes place in Carbonia, a fictional city located in a fictional country named Enerovia, where each participant represents a role in the Just Energy Transition process, e.g. a representative of the Carbonia local council, a representative of the miners' union or a representative of the coal mining company. Each role has specific interests and resources (as money, coal, renewable or coal-based energy, research). Participants can utilise these during the game.

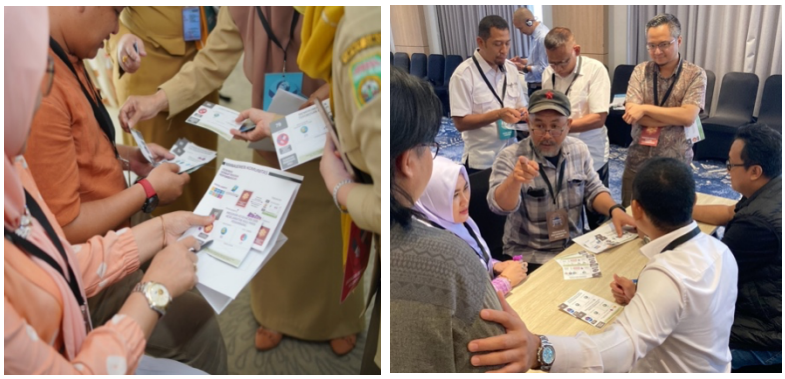
The aim of the game is to ensure Carbonia's energy supply and enable its inhabitants to live well in an intact environment. To achieve this, the indicators of quality of life, energy demand, local economic development, biodiversity/environment and air quality/climate safety are visualized on corresponding fields using cards. The cards are turned over depending on the action performed, showing an improvement or deterioration of the respective indicator.

To achieve an improvement of the situation in Enerovia, (improving one or more of the indicators), actors can carry out actions assigned to their role, as e.g. implementing certain policies or investing in green energies, using the resources available to them. To achieve more impact or to utilise ressources that are not available to themselves, they can collaborate with other actors. At the end of each round, the impact cards are flipped to see, which impact the participants have achieved.

As the simulation is not a competitive game with winners and losers, each session will end with discussions on the decisions made, experiences encountered, and insights gained by the participants.

Implementation in various regions

The pilot version of the “Tales of Carbonia” simulation was successfully implemented in Colombia and Indonesia in September and October 2024. The game materials include detailed descriptions of the different roles and actions as well as the available resources and the consequences of actions in the game. In addition, detailed materials have been developed for the training of the facilitators. In the coming months, it is planned to adapt and implement the simulation for other coal regions in transition – including South Africa, Mongolia, Thailand and Vietnam.



Playing the Simulation in Palembang (left) and Samarinda (right) – Indonesia (Photos by Hermand Barker and Timon Wehnert)

Supported by:

Federal Ministry for Economic Affairs and Climate Action

on the basis of a decision by the German Bundestag

IKI INTERNATIONAL CLIMATE INITIATIVE

Co-funded by the European Union

This publication was produced with the financial support of the International Climate Initiative of the German Federal Ministry of Economic Affairs and Climate Action (BMWK) and the European Union under a Grant Agreement with GIZ. Its contents are the sole responsibility of their authors and do not necessarily reflect the views of BMWK, the EU or GIZ.