

Pathways- How do we get there?

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Abstract

Sustainable transformation is a complex challenge requiring the reconciliation of environmental, social, and economic goals. Through the SDGVisionPath project, we engaged stakeholders to explore transition pathways for achieving SDGs. This paper presents outcomes from a third workshop involving participatory methods: storytelling for identifying and reframing obstacles, Environmental and Social Impact Assessment with the Inequality and Poverty Assessment Model (IPAM) for critical analysis, and backcasting for structuring measures into a 2050 timeline. Key findings highlight the need for eco-social tax reforms, participatory governance, and fair distribution models, alongside challenges such as political resistance and institutional inertia. Recommendations emphasize inclusive decision-making, transparent systems, and continued cross-sector collaboration to advance sustainability.

1 Background and goals

Within the SDGVisionPath research process, the third stakeholder workshop focused on the development of transition pathways (including storylines, instruments/measures, and pathways). These pathways are in turn deduced from the outcomes of the previous two workshops on (I.) systems thinking (Wretschitsch et al., 2024) and (II.) co-creation of future visions to further the SDGs implementation (Hinterberger et al., 2024).

The project team organized four SDGVisionPath workshops in total, building on each other by a step by step process in order to serve as a cross-cutting SDG analysis and implementation approach that links the SDGs on climate action, inequality and poverty reduction and decent work and economic growth. SDGVisionPath applies participatory approaches with various stakeholders and subsequent evaluation of the results to opened up a successful attempt to overcome the exclusive scientific perspective with artistic methods, and hence, support the development of solution proposals from practical social actors (Palmetshofer et al., 2024).

The objectives of the third workshop dealt with the exploration and co-creation of qualitative transition pathways needed to achieve the stakeholder driven future vision and finding leverage points. The main research questions therefore was: **How do we get there?** (transition pathways, storylines and potential leverage points)

The workshop took place on the 16th November 2024 at the University of Applied Arts in Vienna, with 12 participants from various fields.

To answer our research question, the following methods were triangulated and successively applied during the third workshop with the stakeholders: (1) Storytelling, (2) Environmental and Social Impact Assessment (ESIA) in the form of a separate Inequality and Poverty Assessment (IPAM), and (3) backcasting for pathway development. In this paper we present a detailed description of the process developed for this - ranging from theoretical backgrounds to practical approaches and methods such as inverted problems to positive potentials and path creation. The variety of methods used in this workshop is made available and the results are described in detail. For a better contextualization of the prevalent approaches applied, the theoretical background and state of the research in these fields are presented below.

1.1 The role of story telling

Storytelling as a method is the art of storytelling and has established itself as an effective tool in science. It enables us researchers, in cooperation with our artistic colleagues, to communicate complex content in an understandable and appealing way and to involve stakeholders in the development of communication. At a time when the interface between science and society is becoming increasingly important, the role of stories in knowledge transfer and stakeholder engagement is becoming more and more relevant (Fischer et al., 2020). Storytelling thus offers an approach to place SDG-related implementation proposals and concepts in a narrative context that enables listeners to identify with the content (ibid.). Stories activate emotional responses and promote memory, which leads to better retention of information (Green, 2021; Gupta and Jha, 2022). By combining facts with narrative elements, researchers can make difficult topics more accessible and arouse the interest of the audience. One example is the use of case studies in teaching, which present real-life problems and their solutions. These approaches have shown that learners understand and engage better when they experience the content in the form of stories (Yin, 2009).

Figures, data and facts, such as those developed with the help of models, must be packaged in narratives (stories) to make them effective. This begins with the development of scientific findings (internally) and ends with external communication.

With regard to storytelling in stakeholder engagement, the latter is crucial for the successful implementation of scientific co-creative projects. Researchers can use stories to illustrate the relevance of their work and motivate stakeholders to participate in the research or support its results. The storytelling method helps to reach different stakeholder groups and actively involve them in the research process (Joubert et al., 2019).

One example from practice is the 'Citizen Science' project, in which citizens are actively involved in scientific research. By using stories that illustrate the impact and benefits of research on people's daily lives, researchers can encourage engagement and participation (Hecker et al., 2018). However, there are also challenges when using the storytelling method in science because, for example, not all stories are equally effective. For example, there is a risk that important scientific details are lost or simplified (Avraamidou and Osborne, 2009). It is therefore important to find a balance between narrative vividness and scientific accuracy, which is achieved in the research project through a triangulation of artistic and scientific methods.

1.2 The role of ESIA Environmental and Social Impact Assessment (IPAM) and Doughnut Economy

Environmental and (Social) Impact Assessments (ESIA) are crucial tools for evaluating and assessing the environmental and social impacts of projects and policies. Given the global challenges posed by climate change, social inequality and other factors, ESIA play a central role in the implementation of the Sustainable Development Goals (SDGs) as they apply transdisciplinary and science-based assessment criteria and indicators and/or support their development (IUCN, 2021). The ESIA method is known for recognizing the interactions between different SDGs and developing integrative solutions that address multiple goals simultaneously (Xu et al., 2020). ESIA help to identify and minimize potential negative impacts on social and environmental concerns and ecosystems (including climate-related impacts), which is crucial for implementation (Bukowski, 2018; Glasson and Therivel, 2019) .

In order to focus on SDG interaction between poverty and inequalities with environmental and economic dimensions, the Inequality and Poverty Assessment Model (IPAM) was further developed and applied for this research as a form of ESIA - SDG modeling (Bukowski and Kreissl, 2022). Like a classic ESIA, the IPAM offers a systematic approach to identifying, assessing and mitigating the environmental and social impacts of projects (Bukowski, 2018; see *ibid.*; also Bukowski et al., 2024).

A key aspect of any socio-ecological impact assessment is the involvement of stakeholders, who are often crucial to the success of SDG initiatives (Bukowski, 2018; Lattemann and El-Habr, 2009). Therefore, a participatory approach is usually chosen that allows affected communities to contribute their perspectives and concerns (Dendena and Corsi, 2015). This participatory dimension was focused on in this project, as it not only strengthens the acceptance of the projects, but also improves the quality of the decisions by bringing in local knowledge and experience (IUCN, 2021). In particular, the IUCN actively advocates stakeholder participation in ESIA to ensure that the interests and needs of local communities are taken into account (IUCN, 2021; Ostrom, 1990; Suich and Dawson, 2023). This practice not only promotes social justice, but also helps to build trust between project proponents and affected communities (*ibid.*).

The impact assessments using IPAM are therefore carried out co-creatively in this research project, i.e. through participatory modeling with stakeholders and experts. This approach aligns with the Sustainable Development Goals (SDGs), enabling well-founded insights and actionable recommendations for decision-makers (Bukowski and Kreissl, 2022; Glasson and Therivel, 2019).

However, there are limitations as well as some challenges to consider regarding ESIA, and by extension IPAM: For instance, there could be a lack of data required or limited access to data for a comprehensive assessment (Petts et al., 2008). The selection of stakeholders should also be done carefully with involvement of all tangent parties, to reduce the chance of paralogisms or social conflict potentials (Curşeu and Schruijer, 2017; Redpath et al., 2013). These and other obstacles significantly limit the effectiveness of ESIA in promoting the SDGs. To overcome these challenges, robust institutional frameworks are needed to support and promote the implementation and realization of co-creative ESIA such as IPAM and CJC (Bukowski, 2018; Bukowski and Kreissl, 2022). In addition, focus should be put on training professionals and stakeholders to improve the quality of assessments (Morgan, 2012; Morrison-Saunders et al., 2020).

1.3 The Role of Backcasting

Storytelling integrates art with science to communicate complex topics effectively, fostering stakeholder engagement. It simplifies SDG-related concepts, making them relatable and memorable (Fischer et al., 2020). Combining narrative elements with facts engages audiences, as demonstrated in case-based teaching methods (Yin, 2009). This approach is vital for translating data into accessible narratives, supporting both internal understanding and external outreach. Storytelling also enhances stakeholder engagement in co-creative projects by illustrating research relevance (Joubert et al., 2019), exemplified by Citizen Science initiatives that involve communities in scientific exploration (Hecker et al., 2018). However, balancing scientific accuracy with narrative appeal is critical to avoid oversimplification (Avraamidou and Osborne, 2009). Artistic and scientific triangulation can mitigate such challenges.

ESIA assesses the environmental and social impacts of projects, addressing SDG interconnections and proposing integrative solutions (Xu et al., 2020). The Inequality and Poverty Assessment Model (IPAM) extends ESIA methods to focus on poverty-environment interactions (Bukowski and Kreissl, 2022). Stakeholder participation in ESIA processes enriches decision-making with local knowledge and enhances project acceptance (Dendena and Corsi, 2015). This research adopted participatory modeling to co-creatively align assessments with SDGs. Despite their benefits, ESIA face challenges, including data limitations and stakeholder selection complexities (Curşeu and Schruijer, 2017; Petts et al., 2008). Strengthened institutional frameworks and capacity-building are essential to overcome these barriers (Bukowski, 2018; Morgan, 2012). Backcasting, a strategic planning tool, starts with a desirable future and identifies steps to achieve it (Robinson, 1990). Unlike forecasting, backcasting fosters transformative change by envisioning normative outcomes, such as low-carbon economies or equitable societies, through systems thinking and multi-level perspectives (Geels, 2002; Meadows, 2008). Artistic methods enhance backcasting by fostering creativity and stakeholder engagement, though concerns about their practicality persist (Quist and Vergragt, 2006).

Methodological Frameworks in Backcasting

Key approaches include:

1. Scandinavian Backcasting: Emphasizing participatory planning, this iterative process engages stakeholders in visioning and scenario formulation (Dreborg, 1996).
2. Sustainable Transitions Framework: Combines socio-technical transition insights with backcasting to align technological and institutional innovations (Geels, 2002).

3. Integrated Assessment Models (IAMs): These models quantify the feasibility of pathways, aiding policymakers in designing sustainable futures (van Vuuren et al., 2011).

2 Methods: Co-Creative Workshop Process

Building on the common system understanding developed during the first workshop (Wretschitsch et al., 2024) and the positive future visions developed during the second workshop (Hinterberger et al., 2024) stakeholders were invited to a third workshop. This workshop aimed to translate the visions into communicable narratives and actionable pathways toward the desired futures. Participants were tasked with formulating transition pathways that bridge the gap between the status quo and the envisioned goals. The third workshop thus served as the connecting step, constructing pathways from the present state to the envisioned future.

To facilitate this transition, the workshop employed the scientific methods and artistic strategies explained in the previous section: (1) Storytelling, (2) Environmental and Social Impact Assessment (ESIA) in the form of a separate Inequality and Poverty Assessment (IPAM), and (3) backcasting for pathway development.

The outcomes of this process included qualitative narratives, evaluation of measures, and even collages, all of which articulated the envisioned goals as positive future scenarios. These creative outputs served as tools for exploring the relationship between the current system and the desired future. By confronting the system understanding of the status quo with that of the envisioned future, participants identified transition pathways and leverage points, drawing on Meadows' frameworks (1997, 2008).

The narratives, or "Stories for Change," addressed critical questions such as:

- How to initiate, sustain, or alter a pathway?
- How to recognize signs indicating progress or the need to pivot?
- Where to intervene most effectively to achieve the future vision?

These insights culminated in qualitatively and quantitatively formulated statements, allowing participants to articulate goals collaboratively without compromising inclusivity or equity. The co-creative process fostered a shared sense of ownership, ensuring that the goals reflected collective aspirations while respecting diverse needs and perspectives.

2.1 Telling Stories for Pathways

For the first part of the participatory workshop, we utilized a method inspired by Robert Jungk's "Future Workshops" (Jungk and Müllert, 1997). The starting point was the set of goals from the visions developed by participants during the second workshop. In a step-by-step process, each goal from the second workshop was introduced for further exploration. One specific goal discussed was: "Citizens' councils have the power to decide on trend-setting measures, provided they have adequate education."

Participants were initially asked to identify potential problems and obstacles that could hinder the achievement of this goal, writing them on individual cards. As examples, the moderator highlighted potential challenges, such as conflicts with existing laws, a lack of established participation mechanisms, and insufficient citizen education.

After identifying these problems and obstacles, participants presented their findings and were then asked to reformulate them into solutions from a future-oriented perspective ("Future II: How will we have achieved our goals?"). For example, the moderator illustrated this process by transforming a

challenge into the following future scenario: “The education system, science, policy, and civil society will collaborate to integrate citizens' councils as influential decision-makers by expanding existing forms of participation and enacting relevant legislation.”

Following the discussion on goals and future scenarios, the next step focused on linking visionary goals with actionable strategies. This involved defining the instruments and measures with the stakeholders through the participative modeling process with regard to environmental and social impacts.

2.2 IPAM

In the third workshop, the Inequality and Poverty Assessments Model (IPAM) was adapted to facilitate the co-creative development of implementation ideas—specifically measures and instruments—aimed at refining pathways and steps for future implementation. The model systematically gathers and evaluates ideas for achieving a set objectives while identifying potential challenges and conflicts. It operates on four interconnected levels, visually represented as concentric circles (see Figure 1).

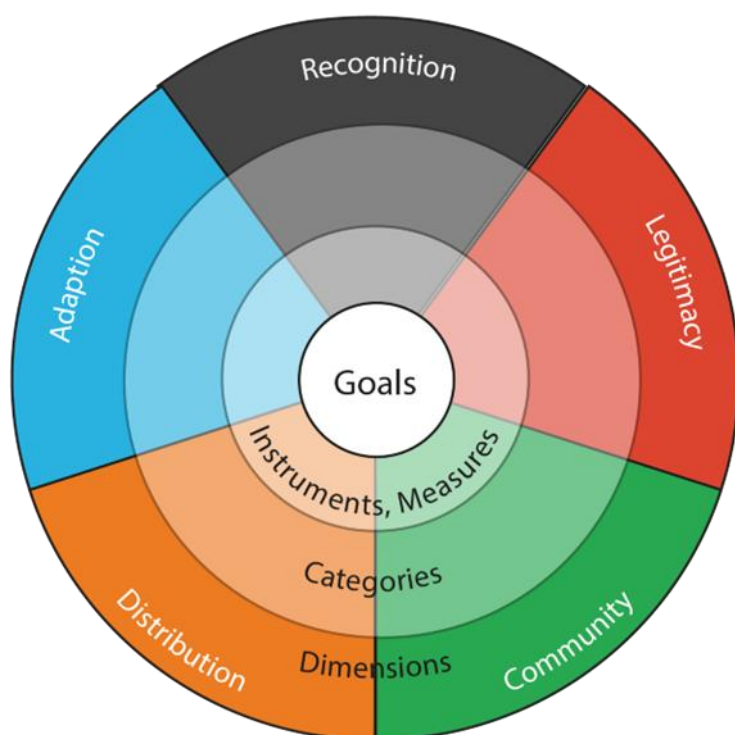


Figure 1: IPAM structure and levels (Source: own)

1. **Outermost Circle:** This level integrates five key dimensions into a socio-ecological framework of inequality and justice:
 - **Distribution:** Access to resources and their availability.
 - **Community:** Offerings and opportunities for participation.
 - **Legitimacy/Legal Framework:** Participation, transparency, and monitoring mechanisms.
 - **Recognition:** Consideration of socio-cultural backgrounds and special needs.
 - **Climate & Environmental Adaptation:** Addressing vulnerabilities with proactive strategies and capacity-building.

2. **Middle Outer Circle:** This circle breaks down each of the five dimensions into specific categories that guide the steps needed to achieve the goals:
 - **Distribution Categories:** Access to resources and availability.
 - **Participation/Community Categories:** communication and procedural participation.
 - **Legitimacy/Legal Framework Categories:** clear rules and regulations, transparency, graduated sanctions, and monitoring.
 - **Recognition Categories:** Socio-cultural background and special needs.
 - **Climate & Environmental Adaptation Categories:** Reducing vulnerabilities, maximizing proactive strategies, and building capacity.
3. **Middle Inner Circle:** This level contains stakeholder-proposed measures and instruments, which are intended to achieve the core goal represented at the center of the innermost circle.

Procedure:

Participants were asked to discuss and evaluate measures identified in the storytelling exercise based on specified dimensions and categories, focusing on relevant themes (e.g., transparency, community, education). Throughout this process, additional measures were identified. At the conclusion, participants allocated a total of 15 points among the dimensions they believed required special attention, indicating areas that were particularly challenging or had significant potential for conflict or improvement. This qualitative scoring provided a way to prioritize challenges and visually represent the assessment within the IPAM. A detailed presentation and discussion of the results can be found in the Results section.

The qualitative results of IPAM were transferred onto supplementary cards featuring keywords, which served as a foundation for the next phase of the workshop: developing implementation pathways. In this phase, participants organized their selected responses along a timeline (see next section 2.3).

2.3 Backcasting for future pathways

Backcasting as a method for future pathway finding offers promising potential for the development of sustainable solutions (see section 1.3). Therefore, the measures and instruments identified and evaluated in the previous steps were placed in a chronological period up to 2050 and put in a causal relationship in the final and third step. The individual pathways were also organized according to the thematic blocks of this workshop, i.e. community pathway - education pathway - transparency pathway. The paths were processed ex-post by the scientific project team: On the one hand, similar measures were bundled together and clustered if they were close in time. Secondly, the measures were also assigned to the SDGs and their indicators from the first workshop, i.e.: SDG1&10 with energy poverty ('A|U'); SDG8 with job satisfaction ('AZ') and real GDP per capita ('GDP') and SDG13 with greenhouse gas emissions - 'GHG'). The result is a comprehensive picture of many individual paths, which are described in more detail in the result section.

3 Results

In the following section the results and analysis of the different workshop tasks and methods are presented. The outcome of the stakeholder driven research process shows the pathway development according to the above described method application.

3.1 Telling Stories

The storytelling process followed a three-step approach as described earlier, enabling participants to identify and transform challenges into constructive narratives.

1. Identifying Problems and Obstacles

In the first step, participants reflected on why the goals formulated during the second workshop (e.g., biodiversity conservation) had not yet been achieved. This step emphasized uncovering systemic barriers and obstacles hindering progress.

2. Exploring Problem Stories

In the second step, participants were encouraged to narrate stories that illustrated these problems and obstacles in more depth. These narratives provided a comprehensive and relatable understanding of the challenges faced. For example, Figure 2 showcases a story created by participants in the context of transparency.

3. Transforming Problems into Positive Narratives

In the third and final step, participants reimagined their problem stories as positive narratives, envisioning solutions and achievable futures. Examples of these transformations include:

- o ‘Gender-equitable work is relevant, but not realizable’ became ‘Gender-equitable work is realizable’
- o ‘Low valuation of care work (‘only wage labor counts’ -> work as self-definition)’ becomes ‘Meaning in life is not just work’.
- o ‘Lack of regulations (prevent transparency in social, ethical and environmental impacts)’ becomes ‘There are regulations for companies for social, ethical and environmental impacts’
- o ‘Lack of legal basis’ became ‘There is a legal basis for compliance with planetary boundaries’
- o ‘Education not just a school thing (social ideals of the nuclear family - education is purely a matter for parents)’ became ‘Social consensus + focus on shared education + upbringing, focus on community’.
- o ‘How do we manage to regain holistic thinking?’ became ‘The training programmes are subject to different perspectives on the topics’.

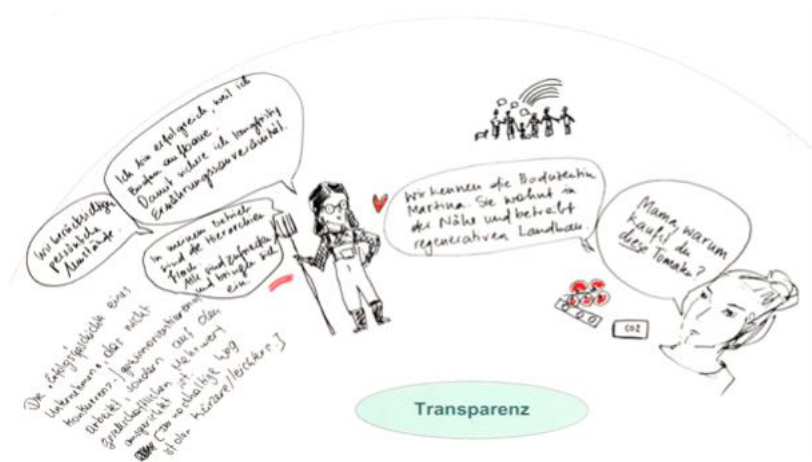


Figure 2: Vision goals for ‘distributive justice’ and ‘growth’ (source: presentation of results from the second workshop)

3.2 IPAM

We start by showing the IPAM results from the evaluation of measures proposed in the story telling exercise, including additional measures identified throughout this process (see section 3.2.1). These results are shown in accordance with the three stakeholder groups (each comprising of 4 participants, plus 2 facilitators from the project team), focusing on (1) community, (2) education, and (3) transparency. Next, we discuss environmental and social conflict potentials along the most important IPAM dimensions (see section 3.2.2). We close with a short summary (see section 3.2.3)**Fehler! Verweisquelle konnte nicht gefunden werden..**

3.2.1 Evaluation and identification of additional measures

Group category: Community

1. Distribution

In addressing questions regarding instruments for (re)distributive justice, the Community group highlighted several strategies, including an eco-social tax reform, the internalization of external costs to reflect true costs, and the implementation of an unconditional basic income. They advocated for a fair redistribution model, emphasizing the importance of shifting public awareness toward a greater sense of collective responsibility. Additionally, they suggested increased promotion of cooperative living arrangements and shared housing as ways to improve equitable access to communal resources. The eco-social tax reform, however, was identified as particularly challenging to implement.

2. Community

Concerning instruments for participation and procedural justice, the Community group primarily underscored the importance of citizens' councils. Many other categories were left unaddressed, with time constraints and the diverse composition of the group cited as reasons for the limited input. As a result, none of the fields received a weighted emphasis.

3. Legitimacy/Legal Framework

When discussing instruments for legitimacy, including rules and laws, the Community group specifically pointed to the need for regulation within the financial sector and the establishment of a "law on responsibility," though details were sparse. In terms of conflict resolution strategies, they proposed the inclusion of responsibility education within formal curricula, legally guaranteed and anchored. Regulation of the financial sector was a focal point, receiving particular weight.

4. Recognition

In response to questions on recognizing and addressing specific needs, the Community group emphasized greater appreciation for care work, including reproductive labor, as well as the personalization of working hours to accommodate individual circumstances (such as health and workload considerations). Additionally, they recommended expanding supportive childcare options. None of the areas in this section were weighted.

5. Climate and Environmental Adaptation

On the topic of fair climate and environmental adaptation, the Community group again stressed the importance of raising awareness, particularly concerning environmental and climate-related issues through citizens' councils. They reiterated the eco-social tax reform as a key tool for equitable

environmental adaptation and suggested tree planting for shade and the creation of teaching spaces for neighborhood greening. The eco-social tax reform was again highlighted as a priority.

Group category: Education

1. Distribution

Regarding instruments for (re)distributive justice, the Education group proposed the creation of communal spaces for diverse forms of living, such as neighborhood and community buildings, with an emphasis on interactive courtyard and village square designs. Other ideas included child-centered educational communication and appropriate compensation for primary and early education professionals. They acknowledged that the development of community spaces, given the rising costs of land and housing, along with the proper remuneration of educators, presents significant challenges.

2. Community

In response to questions on participation and procedural justice, the Education group emphasized that participation should be viewed through the lens of inclusion, aiming to integrate currently underrepresented groups. They suggested collaborative activities, such as community gardening and research gardens, to foster collective decision-making processes. A "buddy program" was also proposed to bring diverse groups together, reinforcing community bonds and facilitating the reintegration of marginalized groups into decision-making. No weighting was applied, as the group felt these suggestions were both feasible and low-conflict.

3. Legitimacy/Legal Framework

The Education group, in considering legitimacy, proposed a shift from performance-based evaluation to qualitative assessment within educational settings. They recommended incorporating empathy and relationship-building into curricula. The group gave particular weight to transitioning away from traditional performance metrics, acknowledging the resistance such changes may encounter.

4. Recognition

For recognizing diverse needs, the Education group suggested integrating non-Western knowledge systems into school curricula to balance the dominance of Western frameworks. They also recommended fostering exchanges between educational institutions and external bodies (e.g., care homes, organic farms) to encourage on-site learning. They highlighted the challenge of expanding beyond Western-centric educational norms and fostering institutional partnerships as a significant undertaking.

5. Climate & Environmental Adaptation

The Education group proposed the development of biodiversity-promoting research gardens and shared urban cultivation areas as key instruments for fair climate adaptation. They suggested courses in urban gardening, vertical farming, permaculture, and other sustainable practices, and advocated for the exclusive provision of organic food in educational institutions. The challenge of establishing communal cultivation spaces, rather than academic collaboration, was given particular emphasis.

Group category: Transparency

1. Distribution

Addressing (re)distributive justice, the Transparency group proposed fair allocation of the carbon budget on a per capita basis, with transparent calculations of individual consumption levels. They also advocated for disclosing the true costs associated with the production and consumption of goods and services, as well as supporting access to sustainable local agriculture. They called for price caps on essential goods to ensure affordability and recommended transparent labeling regarding environmental and health impacts. They emphasized the potential socio-economic conflicts associated with accurately reflecting product costs and implementing fair distribution mechanisms.

2. Community

For participation and procedural justice, the Transparency group suggested several measures, including monetary compensation for participation, simplified language for inclusivity, childcare services, and analysis of participant demographics to avoid exclusion. Educational initiatives were also recommended to demystify production processes and decision-making through accessible formats like visualizations. This area did not receive weighted consideration from the participants.

3. Legitimacy/Legal Framework

The Transparency group proposed a range of ideas to enhance transparency and legitimacy, such as a globally regulated CO₂ budget that considers regional inequalities, a legally enforced profit cap, restrictions on monopolization, and transparency around lobbying activities. Conflict resolution instruments included exposing power dynamics and developing regional indicators of GDP and employment distribution. Emphasis was placed on the CO₂ budget regulation, profit caps, and lobbying transparency.

4. Recognition

In terms of recognizing and accommodating special needs, the group focused on the implications of a CO₂ budget for individuals with illnesses, disabilities, or other specific requirements. They acknowledged the complexities involved in accurately assessing additional needs for such groups, assigning particular weight to these challenges.

5. Climate and Environmental Adaptation

The Transparency group recommended creating agencies dedicated to clear, accessible communication about environmental transparency. Proposals included establishing consultative environmental and citizens' councils. They suggested various adaptation measures, such as taxation and prohibitions on environmentally harmful activities, eco-design guidelines, and the use of product passports. For regional adaptation, they advocated for precise criteria to measure success and proposed limiting advertising of harmful products. Their guiding principle was to replace promotional messaging with informative content.

3.2.2 IPAM Conflict Potentials

The following section presents stakeholders' assessments of potential socio-ecological conflict dynamics. Workshop participants evaluated their proposed measures using the dimensions and categories outlined in the Inequality and Poverty Assessment Model (IPAM), with a focus on identifying and addressing potential social and environmental tensions or conflicts.

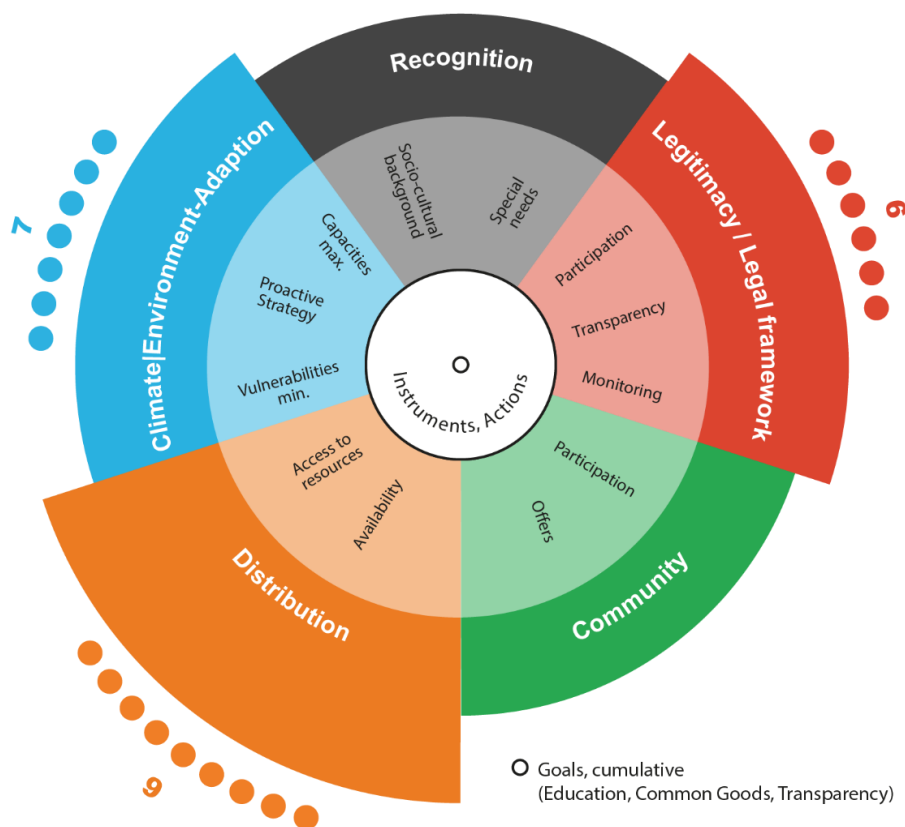


Figure 3: IPAM results from the third stakeholder workshop

According to the results of the IPAM analysis, and visualized in Figure 3, the highest conflict potentials are seen in the ‘Distribution’ dimension/categories (9 points), followed by the second highest rating of conflict potentials regarding measures within the dimension/categories of ‘Fair Climate- and Environmental Adaptation’ (7 points). The third highest assessment of conflict potential relates to the proposed measures within the dimension/categories of “Legitimacy” (6 points). Each group was allowed to distribute a maximum of 15 points. Since not every group made use of all the points, the total sum is less than 45. The specific measures with a high estimated conflict potential and their allocation to the dimensions are listed below. The dimensions sometimes overlap and were therefore clustered according to the main characteristics of their problem reference in agreement with the participants, such as the allocation of the carbon budget to the dimension “distributive justice”.

Conflicts on Distribution

Community Group:

- **Potential Conflict:** Implementation of an **eco-social tax reform** aimed at true cost internalization is seen as complex and contentious. This involves shifting public consciousness and introducing an unconditional basic income, which may encounter resistance due to perceived economic impacts.
- **Conflict Potential:** High due to the challenge in gaining consensus on taxation and income redistribution, impacting various social groups differently.

Education Group:

- **Potential Conflict:** Establishing **communal living spaces** and compensating education professionals adequately is challenging, especially given rising housing and land costs.
- **Conflict Potential:** Moderate to high, as equitable community development and fair wages are subject to economic constraints and varying local priorities.

Transparency Group:

- **Potential Conflict:** Proposals include **fair CO2 budget allocation per capita** and disclosing the true environmental costs of goods. Price caps for essential goods aim to address socio-economic inequalities.
- **Conflict Potential:** High, as socio-economic interests may clash over what constitutes "fair" budgeting, accurate cost reflection, and affordability measures.

Conflicts on Fair Climate-Environmental Adaptation

Community Group:

- **Potential Conflict:** Key focus on **eco-social tax reform** and raising environmental awareness through citizens' councils. Tree planting and neighborhood greening highlight adaptation priorities.
- **Conflict Potential:** Moderate, as proposals center around awareness and community efforts. However, enforcing tax reforms for environmental goals can be divisive.

Education Group:

- **Potential Conflict:** Creation of **biodiversity-promoting gardens** and urban farming spaces. Courses on sustainable practices aim to integrate climate adaptation into education.
- **Conflict Potential:** Moderate, due to logistical challenges in space development and education system reforms.

Transparency Group:

- **Potential Conflict:** Promotion of **eco-design standards** and clear communication through consultative councils. Recommendations include prohibitions on harmful activities and public awareness via transparency.
- **Conflict Potential:** High, as measures like restricting advertising for harmful products and implementing eco-design standards can face resistance from commercial sectors.

Legitimacy Conflicts

Community Group:

- **Potential Conflict:** Need for regulations in the financial sector and a "law on responsibility." Conflict resolution through education, with specific weight on financial oversight.
- **Conflict Potential:** High, since changing financial regulations can face strong opposition from vested interests.

Education Group:

- **Potential Conflict:** Shift from traditional **performance-based evaluation** to qualitative assessments in education, prioritizing empathy and relationships.

- **Conflict Potential:** High, as altering evaluation standards involves significant institutional resistance, particularly from traditionalists in the educational sector.

Transparency Group:

- **Potential Conflict:** Calls for global CO2 budget regulation, profit caps, transparency in lobbying, and revealing power dynamics. The legitimacy of these measures is tied to their enforcement.
- **Conflict Potential:** Very high, as proposed regulations challenge powerful economic actors and require global consensus, which is often difficult to achieve.

3.2.3 Summary of Particularly Challenging Areas

1. Conflicts on Distribution:
 - a. Eco-social tax reforms (Community Group) and fair CO2 budget allocation (Transparency Group) are critical and highly contentious, due to potentially adverse socio-economic impacts among certain groups.
2. Conflicts on Fair Climate-Environmental Adaptation:
 - a. The focus on integrating **eco-social reforms** and environmentally sustainable spaces (Community and Education Groups) highlights challenges in implementation, requiring broad societal buy-in.
3. Legitimacy Conflicts:
 - a. Changes in financial regulations (Community Group) and transparency measures (Transparency Group) face high conflict potential, especially from sectors with established interests.
 - b. Altering educational standards away from performance-based evaluation (Education Group) underscores challenges in shifting entrenched institutional practices.

3.3 Identification of Pathways

In the final exercise, the measures and instruments identified and assessed in the previous stages were organized into a chronological framework extending through to 2050 and connected within a causal context. These paths are further structured around the key themes of the workshop: the community path, education path, and transparency path.

The paths were subsequently analyzed by the scientific project team: Similar measures were grouped together and clustered according to their temporal proximity. Additionally, the measures were aligned with the SDGs and their corresponding indicators from the first workshop, as follows: SDG 1 & 10 with energy poverty ("A|U"); SDG 8 with job satisfaction ("AZ") and real GDP per capita ("BIP"); and SDG 13 with greenhouse gas emissions ("GHG"). The outcome is a detailed and comprehensive representation of numerous individual paths, which will be described in further detail below, and is visualized in Figure 4 .

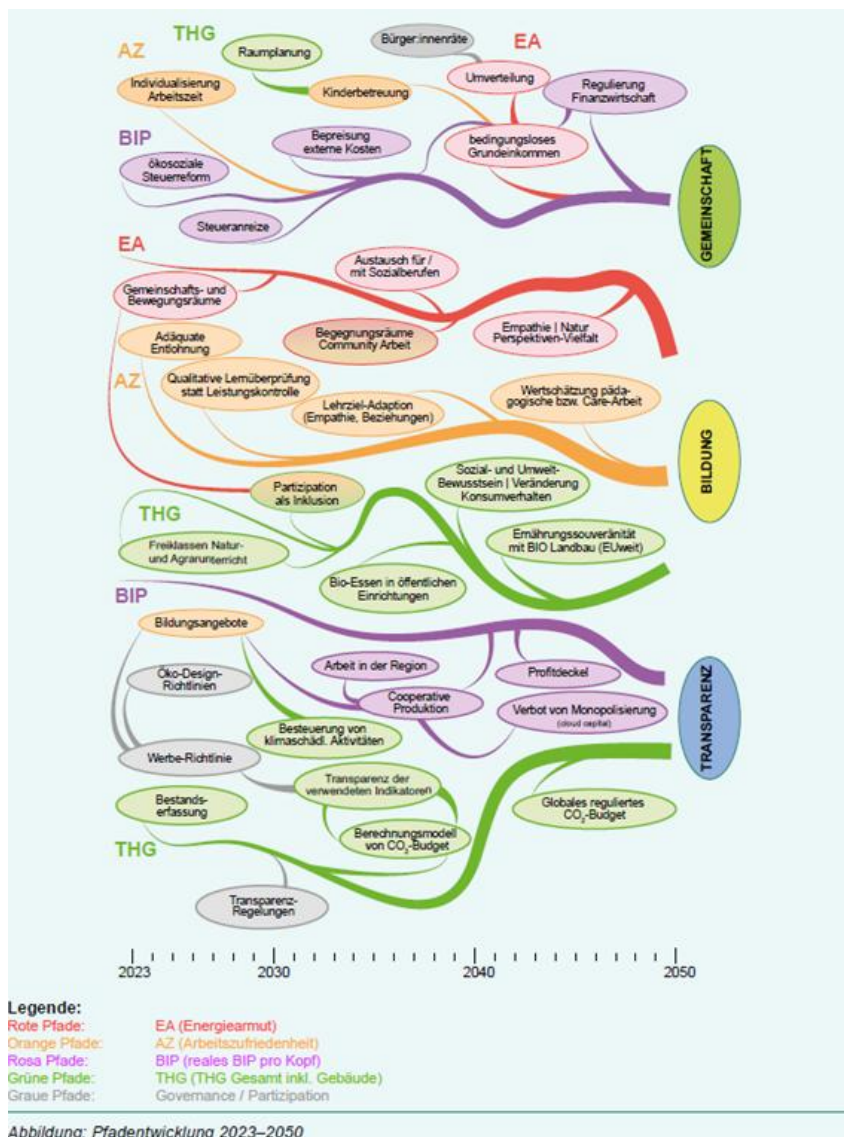


Figure 4: Path development 2023 - 2050, source own

The results show that the achievement of climate goals (SDG 13) and broader sustainability targets were reflected by the suggestions and input of various stakeholders, including governmental bodies, businesses, civil society organizations, and local communities. These stakeholders identified key strategies and initiatives that were essential for addressing climate change, while promoting social equity, and fostering economic sustainability. This section presents the results derived from these stakeholder suggestions, illustrating the strategies that were deemed most effective for advancing the sustainability agenda.

3.3.1 Climate Goals and Environmental Sustainability (SDG 13)

The results show that stakeholders from diverse sectors strongly advocated for the early adoption of eco-social tax reforms and ecological tax incentives as the most effective means of driving environmental sustainability. Environmental organizations, businesses, and policymakers emphasized the need for climate-oriented spatial planning and the integration of eco-design regulations to reduce the environmental footprint of products and services. Stakeholders also suggested that increasing transparency regarding the environmental and social impacts of products was crucial for influencing consumer behavior and corporate practices. A significant suggestion from stakeholders was the

establishment of organic food programs in public institutions by 2030, with the eventual goal of achieving food sovereignty through organic farming across the European Union by 2050. Furthermore, stakeholders from the environmental and policy sectors recommended the introduction of a binding carbon budget for Austria in the 2030s, which they believed would be critical in meeting the country's long-term emission reduction targets.

3.3.2 Economic Sustainability and Job Satisfaction (SDG 8)

In terms of economic sustainability (SDG 8), the results indicate that stakeholders from the business, labor, and education sectors suggested several measures to improve job satisfaction and work-life balance. These included the individualization of working hours, fair compensation for both skilled labor and care work, and enhanced opportunities for professional development. Stakeholders from trade unions and workers' rights groups particularly advocated for policies that would ensure gender equality in the workplace. The enhancement of childcare services was another key suggestion, with stakeholders emphasizing the need for greater investment in early childhood education and care. In addition, local communities and businesses proposed expanding regional employment opportunities through cooperatives and local production initiatives. Towards the end of the period, stakeholders recommended the introduction of a universal basic income, as well as regulations to control the financial sector and introduce price caps for essential goods to mitigate economic inequalities.

3.3.3 Addressing Energy Poverty and Social Inequality (SDGs 1 & 10)

The results reveal that stakeholders representing marginalized communities and social organizations identified energy poverty as a critical issue that needed urgent attention. They suggested a range of measures to address this, including increasing energy efficiency and providing support for vulnerable populations. Additionally, stakeholders proposed that eco-social tax reforms, along with educational initiatives, could help reduce inequality, particularly for low-income households. Social organizations and community leaders emphasized the importance of creating spaces for social interaction and community engagement, with suggestions for the development of communal spaces and movement areas to foster solidarity and inclusion. Furthermore, stakeholders from social professions stressed the need for policies that promote a diversity of perspectives to help build empathy, strengthen community ties, and encourage environmental stewardship.

3.3.4 Institutional Framework and Governance

Stakeholders from both the public and private sectors, as well as civil society organizations, suggested that participatory decision-making processes were key to achieving sustainability goals. A significant suggestion from these groups was the introduction of citizens' assemblies in the mid-2030s to facilitate dialogue and ensure broad public involvement in policy development. The results show that stakeholders believed these assemblies were essential for resolving conflicts and addressing challenges related to equity, legitimacy, and environmental adaptation. Key issues identified by stakeholders included the establishment of cost transparency in sustainability initiatives, the regulation or banning of climate-damaging activities, the implementation of fair wage policies, and the financing of sustainable infrastructure. Additionally, stakeholders emphasized the need for a binding carbon budget and educational programs to ensure that these measures were both effective and equitable.

4 Conclusion, Discussion and Outlook

The results of this assessment underscore the critical role of stakeholder contributions in shaping policies and initiatives aimed at addressing environmental, economic, and social challenges. The diverse recommendations put forward by stakeholders—ranging from eco-social tax reforms and social equity measures to participatory governance structures—hold significant potential to influence

strategies that will lead to the successful implementation of sustainability targets. These contributions highlight the importance of stakeholder engagement in guiding sustainable development efforts. The application of the Inequality and Poverty Assessment Model (IPAM) revealed key socio-ecological conflict potentials, particularly in areas involving resource redistribution, societal adaptation, and regulatory changes that challenge existing power structures. The most significant conflicts were identified in the dimensions of distribution, legitimacy/legal aspects, and climate and environmental adaptation. Measures such as eco-social tax reforms, price caps, and increased compensation for skilled workers and care work were flagged as having notable distribution-related conflict potentials. While no direct conflicts were identified in the community dimension, certain measures, such as the creation of community meeting spaces, were seen as potentially generating tensions in the distribution dimension. In the legitimacy/legal aspects, regulatory measures—such as carbon budgeting, profit caps, and increased transparency in the financial sector—were seen as especially challenging. The recognition dimension raised concerns about the transparency of carbon budgets and their effects on marginalized groups, as well as the dominance of Western education systems. Participants also highlighted the broad challenges of implementing climate and environmental adaptation measures, whether market-based, regulatory, or formative, emphasizing the complexity of such initiatives.

The discussions within the three groups—Community, Education, and Transparency—reflected a shared commitment to fostering equity, sustainability, and inclusive decision-making. The proposed measures prioritized redistributive justice, transparent legal frameworks, and the integration of marginalized voices, while acknowledging the difficulties inherent in their implementation. Ultimately, the overarching goal of fostering a just and sustainable future was emphasized, alongside a call for continued collaboration and dialogue across all sectors of society.

The stakeholder-driven approach of SDGVisionPath highlights that achieving climate and sustainability goals requires a multifaceted, collaborative effort encompassing policy reforms, community engagement, and institutional changes. The stakeholders' proposals emphasize the need for inclusive, transparent, and equitable governance systems, alongside concrete actions to address environmental, social, and economic disparities. The shared vision for a just and sustainable future reinforces the importance of continued dialogue and innovation, aiming for long-term sustainability while fostering social cohesion and economic prosperity.

The identified pathways serve as a roadmap for future efforts, although their successful implementation will require overcoming significant challenges—particularly in terms of socio-economic conflicts, political resistance, and the complex nature of institutional reform. By integrating the results of this project with similar processes at the micro and meso levels, a comprehensive methodology for visioning and indicator development could be established. Drawing from tools in artistic research, systems analysis, and participatory indicator development, this methodology could be applied across a wide range of sustainability challenges (Hinterberger, 2025; Hinterberger and Bukowski, 2024). This collaborative and multi-disciplinary approach will be essential in driving forward the transition to a more sustainable, equitable, and just global society.

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