APPROACHES TO PARTICIPATORY POLICYMAKING PROCESSES:

Technical Report

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1. Introduction

Participatory policy making processes or participatory governance have become increasingly popular as a guiding principle for designing national strategies and policies, including those intended to promote industrial development. Milberg et al. (2014), for example, assert that achieving industrial upgrading within global value chains (GVCs) in ways that translate into sustainable domestic social gains—which the authors refer to as 'joint economic and social upgrading'—requires "multi-stakeholder initiatives and linkages between commercial firms, workers and small-scale producers" (Milberg et al., p.172); hence, it is possible to balance gains across employment and wage growth, on the one hand, and improved labour and environmental standards, on the other hand. Santiago (2018) finds that multi-stakeholder participatory processes represent a basic tenet of strategy setting and policy responses to the Fourth Industrial Revolution in middle-income countries. Such multi-stakeholder approaches reflect the multiple dimensions countries need to address, often simultaneously, to facilitate the adoption and adaptation of new technologies, organizational processes and production practices associated with this revolution. Accordingly, the Digital Transformation Monitor (2017) documents the trend towards creating large multi-stakeholder platforms to foster policies for digitalization of manufacturing in developed countries.

Policymakers seek to explore and identify transformative solutions through different participatory approaches, foster shared visions of strategic goals, identify tested policy tools for scaling up, inform the design of policy incentives or uncover capability gaps that would justify dedicated policy interventions. Enhanced policy coordination mechanisms at different levels are necessary if commitment from multiple stakeholders is to materialize during policy implementation. Participatory governance is advocated to inform novel rationales and identify alternative models for policy action when addressing development challenges (Aiginger and Rodrik, 2020; Ferrannini et al., 2021), including resil-

ience against emerging disasters, which may have major implications on long-term industrialization and sustainability (UNIDO, 2021; Begovic et al., 2021). A multi-stakeholder approach is also key for transformative innovation to move society in the right direction to secure long-term benefits (Schot and Steinmueller, 2018).

While the adoption of multi-stakeholder participatory processes fosters interaction, dialogue and compromise building between academia, government, the private sector and other organizations that contribute to policy design, the processes can be mired in trade-offs associated with the organization and governance of such complex processes. For example, the actors involved need to ensure that decisions are binding and aligned with agreed roadmaps for policy implementation, with defined roles and responsibilities for all actors involved.

While collaborative approaches to policymaking can facilitate the convergence of industrial and other types of policies, successful collaboration is not necessarily guaranteed. The organizations involved differ in terms of institutional structures and practices, historical contexts, priorities, etc. For instance, the World Bank (2011) finds mixed results based on a review of over 20 years of private-public processes in the Mediterranean region, which is indicative of the complexity of this type of dialogues. The review concludes that success depends on the ensuing direction of the policy action, i.e. on where it leads in terms of industrial growth, for example. Participation in public-private dialogues may not suffice to guide decision-making, as the actions of participants might be influenced by those of other actors in the markets. Interest-driven decisions and lobbying by certain societal groups should be factored in in decision-making processes.

But what does 'participatory process' mean in practice? What are the benefits of participatory governance? How can such processes be organized? While structured social dialogue around industrial policymaking can address institutional dysfunctionalities, the risks of derailing policy-

making given the diversity and heterogeneity of the actors involved are just as great. Participatory processes can be meaningless and counterproductive, if conducted in an unstructured way. Without proper organization and mechanisms to take account of feedback may lead to "stakeholders' fatigue", when participants feel that their contribution does not change anything, that their voices are not being heard, or that their opinions and contributions serve other vested purposes. Similarly, the participatory process should draw on a wide variety of qualitative and quantitative data, which requires substantive computational efforts for their evaluation.

Thus, the conditions under which dialogue can be implemented and the circumstances under which successful participatory policymaking processes can be carried out must be clearly defined. It is moreover necessary to secure participation in the decision-making process, which leads to industrial policies that have greater social acceptance. Such policies hinge on the necessary legitimacy, buy-in and support for their implementation and trust in their outcomes.

This technical report aims to identify the conditions for effective multi-stakeholder participatory processes whereby all relevant actors are empowered to contribute to industrial policymaking to achieve optimal outcomes.

More specifically, this technical report:

▶ Discusses different approaches to organizing participatory policymaking processes, indicating the pros and cons that are associated with each approach;

▶ Identifies the types of institutional frameworks and the capabilities for policymaking, design and implementation required for such strategies to be effective;

▶ Illustrates how the selected approaches to participatory policymaking work, based on real case examples, including from developing countries;

▶ Provides recommendations on how to develop a policy tool to assist those interested in designing and implementing a participatory policymaking process.

The technical report discusses the application of multi-stakeholder participatory approaches to demonstrate how intensive or extensive such an exercise can be in practice, and documents some basic elements for organizing a participatory policymaking exercise, as well as some common pitfalls. Emphasis is placed on introducing key concepts and their practical application in distinct policy contexts. The potentials of participatory processes as well as the risks are explained.

The goal is to standardize knowledge and to facilitate systematic comparisons of cases and practises to support reproducibility and hypotheses testing, which allows for learning between approaches to occur. We propose a road map with recommendations drawn from the literature on how to successfully set up participatory processes, what factors to pay attention to and how to address conflict.

This technical report is structured as follows. Section 2 provides a brief theoretical overview of existing models of participatory governance or multi-stakeholder participation in policy processes. The discussion of the various possible approaches, including some that have recently emerged in the context of innovation policy, is non-exhaustive. Section 3 introduces some benefits that generally arise from participatory governance, including but not limited to learning and 'cross-fertilization' among participants in those processes. The discussion includes frequent caveats and possible ways to address these. Section 4 recommends four steps to be followed as part of the organization of participatory processes. Finally, Section 5 introduces some useful tools to facilitate the implementation of participatory policy making processes.

2. Models to foster citizen engagement in industrial policymaking and governance

The terms 'participatory process', 'co-creation' and 'co-production', which are frequently used interchangeably (Vargo and Lusch, 2004), are crucial for involving citizens in policymaking (Gebauer et al., 2010). The participation of citizens in policy development and decision-making is not a new concept. From Arnstein's (1969) ladder of participation to Xavier et al.'s (2017) methodology of engagement, these works outline the hierarchy of various layers of engagement options of local community residents. Manzini's (2015) map of participation entails a dual axis of collaborative and active involvement, which allows for the planning of participatory efforts. Manzini contributes to the existing methodology of participatory processes by focusing on the quality of interactions and the strength of social relationships formed as a result of participatory activities.

Several studies describe various phases of co-production with citizens and develop recommendations for active citizen involvement in the planning and implementation of industrial projects (Brandsen and Pestoff, 2006; Verschuere et al., 2012). Many science and policy discussions focus on the use and organization of co-creation and participatory procedures. Some studies also address the many innate difficulties in defining the basic notions of democracy and the participatory processes that are part of it (Dahlberg, 2011). Finally, several studies include overviews of various ways to evaluate the impacts of participatory processes (Komendantova et al., 2018) and of various definitions, philosophies and methodologies for organizing participatory processes (Al-Jamal and Abu-Shanab, 2016).

The following section revisits various models of industrial policymaking and governance, including traditional, socio-environmental and systemic approaches and innovation models.

2.1. Traditional model

The traditional model was characteristic of the period during which the backbone of the existing industrial infrastructure in Europe and other countries was being constructed. At the time, this infrastructure was perceived as a driver of socio-economic development, and decisions were taken in a top-down manner—mainly at the national governance level—and were implemented at the local governance level. Citizens generally did not question decisions to build this infrastructure, because the assumption was that experts were the only legitimate actors who could produce and transfer knowledge. The relevance of this model has come under scrutiny in recent decades, especially when decisions had to be taken under conditions of uncertainty.

The traditional model is connected to top-down, mission-oriented policymaking to build capacity and guide industrialization. Mazzucato (2015) describes the pioneering role of the state in this process, guiding industrial firms' investment efforts and business orientation towards high technology. The state helps address the risks and contain the costs associated with high technology; such investments are deemed uncertain, risky and costly. Under this model, the state makes decisions on the design and implementation of policies. This traditional model has existed for quite some time, yet new elements of bottom up and participatory governance have emerged, calling into question the pertinence of top-down approaches as the most suitable ones to inform policymaking.

Today, people's attitude towards industrial projects is changing compared to the widely accepted model 60 to 70 years ago. This change is especially visible in Europe, where people are emphasizing their right to participate in decision-making processes that impact their community, and about the need to implement industrial projects with the lowest possible impacts on the environment and on human health. The focus of the discussion is also changing, from contributions of industrial projects to national economic growth to contributions at the local level and the distribution of the risks, costs and benefits of these projects between the local and national level.

This change in perspective has been driven by a growing level of citizen awareness about their right to participate in decisions that have an impact on their lives in line with the Universal Declaration of Human Rights (Zillman, 2002), but also due to several industrial accidents that have occurred during the last century and various awareness raising activities about the need to protect the environment. These changes call for participatory processes to engage local community members, which goes beyond static notions of social acceptance. Such engagement is helpful in preventing public protests and is also a valuable input for project planning and implementation.

The notion of "public acceptance" was frequently used in previous years within the scope of the so-called "not-in-my-backyard" (NIMBY) discourse. The NIMBY discourse had a significant impact on how industry, legislators and the media perceived public participation and inputs from communities that host industrial infrastructure. The term "public acceptance" was coined to describe the attitude of residents towards a project being planned or upgraded in their communities. Accordingly, the residents of these communities generally acknowledge the need for this new industrial project but are hesitant about accepting the development of new projects in their communities (Schweizer-Ries, 2010). NIMBY is also commonly considered a "social divide" between strong support for industrial policy goals, and opposition to the deployment of industrial capacities in local communities (Bell and Khoury, 2016).

Many social scientists claim that the NIMBY rhetoric is a misleading, inappropriate and derogatory way of interpreting complaints. The so-called "decide-announce-defend" (DAD) approach, which industrial policy solutions were previously based on, involves collaboration between scientists and government authorities, with follow-ups and the dissemination of results of decision-making processes to the public. In this model, the absence of mechanisms to voice one's own opinions and concerns leads to public outrage, a phenomenon known as "procedural justice" (Bell and Khoury, 2016). As regards industrial projects, the DAD approach was found to be a frequent cause of societal tensions, project delays and even project cancellations (Wolsink, 2010). By contrast, a review of successful experiences of deployment of industrial infrastructure shows that including the perspectives of laypeople and public values helped improve the legitimacy of decisions on the deployment of such projects and increased trust among local communities in decision-making outcomes (Renn, 2008).

2.2. Socio-environmental model

This model was developed in the 1970s when multiple stakeholders with diverse, and often even conflicting views were invited to the table to co-design solutions for the management of natural resources, such as marine management (Newton and Elliott, 2016) or natural resources, livelihoods and agriculture (Bruggen et al., 2019). The benefit of this model is that it promotes compromise solutions among parties with diverging and conflicting views.

Various discourses on industrial policy perceive public participation and co-creation as a means to achieve public and societal approval. When the acceptance of residents is required to legitimize a project or to build infrastructure without public protest, the term "acceptance" is frequently associated with tolerance of something that simply cannot be changed or is unavoidable (Batel et al., 2013). This perception applies a top-down normative perspective (Rau et al., 2012) and has frequently been criticized as it indicates a passive attitude towards something a stakeholder cannot change as opposed to a desire to utilize or pay for innovation, which implies a more active attitude of the stakeholder.

As regards social or public acceptance, Wüstenhagen et al. (2007) define "acceptance" as a multi-dimensional concept that encompasses attitudes towards technological and infrastructural advancements. There is a distinction between social acceptability and public acceptance; public acceptance applies to laypeople while social acceptability

applies to organized groupings of stakeholders. A group of organized stakeholders with strong knowledge and sectoral competence capable of participating in the decision-making process is referred to as 'social acceptability'. 'Public acceptability', which has received far less research attention than 'social acceptability', relates to residents and laypeople who are either directly or indirectly affected by infrastructure developments. Only recently has research turned its focus on public acceptability, highlighting the importance of studying communities' and individuals' responses to certain projects (Batel et al., 2013).

Another reason why industrial policy should move beyond the notion of social acceptance and pursue participatory approaches is to take stock of societal attitudes, including support, resistance or opposition to various industrial projects (Batel et al., 2013). Understanding societal attitudes towards industrial policy more generally, towards organizations and companies that implement the projects as well as towards the industrial projects themselves can guide the implementation of the projects, ensuring a lower impact on the environment and human health, with greater benefits for both the communities and for the implementing companies while avoiding damages and preventing long-lasting protests and opposition (Komendantova et al., 2015). Such an understanding should rise above the need to provide stronger arguments in favour of the given project or for the use of different means of communication to increase its acceptance (Smith and McDonough, 2001). In fact, successful implementation of industrial projects re-

quires efforts to co-create strategies for their implementation while ensuring that those projects result in opportunities for local communities to live in a better place.

A lot of research has been conducted on public acceptability in relation to public resistance and how to overcome it. By contrast, attitudes towards infrastructure have received less attention (Cohen et al., 2014). Factors such as trust in the government or in the company implementing the project, the perceived need for the industrial project as well as its perceived and expected impacts strongly influence the opinions of local community residents towards various industrial projects. Because the lack of trust can lead to severe opposition to industrial projects, a participatory process might help increase the level of trust.

There is evidence that local community residents might oppose industrial projects because they disagree with the industrial company's policy or because of how the project was planned and the decision-making process was conducted, rather than because they oppose the industrial project itself (Ek, 2005). Residents' scepticism may also be viewed as a form of 'place-protection', resulting from a reaction to developments that threaten existing emotional ties and place-related identification processes (Devine-Wright, 2009). Local community residents are frequently concerned about the need for such industrial projects. They have reservations about the need for large-scale industrial infrastructure or investments (Wüstenhagen et al., 2007), or may scrutinize the purpose of the industrial project and question whether alternatives for this infrastructure exist.

2.3. Systemic approach and innovation model

This model has only emerged recently and covers horizontal industrial policy measures to stimulate innovation, new approaches to innovation and demand-driven innovation policies. It relates to innovations such as the green economy or digitalization. The model envisages active involvement of stakeholders and citizens in co-creating policy solutions and innovations. Examples include various forms of engagement in green economy or digitalization, such as energy groups participating in policy forums, citizen steering committees, various elements of innovation networks involving start-ups, accelerators, networks of knowledge dissemination, innovation incubators and laboratories, etc.

We describe co-creation here as an evolving concept within participatory design, with terms such as 'co-design' and 'co-production' frequently used to define it. Co-creation is a more precisely defined term and refers to the active participation of end-users in various phases of the manufacturing process (Prahalad and Ramaswamy, 2000; Vargo and Lusch, 2004). Co-creation is characterized by typical push and pull factors and implies that many parties collaborate to 'create' something rather than only one party producing something for the other to use (push approach) or only one party expressing a clear requirement or need to the other (pull approach). To reach a mutually agreed

solution, parties must be equal partners with comparable resources and speak the same language. This means that once innovation goals and any related concerns are defined at various governance and corporate levels, the research results must be translated into ideas that can be understood by those who can contribute to the solution by solving the identified problem(s), such as the private sector, creative communities and end-users.

In short, to overcome the push-pull dichotomy and achieve a thriving, competitive co-creation process with significant economic effects, governments, public administrations and research institutions must utilize entrepreneurial methods. The systemic approach and innovation model are a novel method for performing market research in both the private and public sectors. A major roadblock to open collaborative innovation is persuading researchers and government officials to speak the same language, to approach challenges from similar perspectives, and use comparable tools and resources.

Framed in terms of citizen involvement, Voorberg et al. (2015) distinguish between three types of approaches to co-creation in social and industrial innovation, in which citizens are co-implementers, co-designers and co-initiators.

Citizen participation in the (co)-initiation or co-design stage is referred to as co-creation. Co-production, on the other hand, is defined as people's participation in the (co-)implementation of public services (Voorberg et al., 2015). Most research in this area according to Voorberg et al. (2015), focuses on citizens as co-implementers, with only few studies perceiving people as co-designers of innovation.

Many philosophers, scholars, and government officials are exploring the co-creation of values in industrial policy. However, they face the challenge of tangibly defining such a hazy, subjective and abstract term as 'value' (Bianchi and Labory, 2011). A range of perspectives exists around the notion of value as well as around the mechanism to capture and measure it (Warwick, 2013). The emerging reality evolves around interactions between the government, industrial firms and local community residents, which represent the foundation of co-creation. As a new frame of reference for value creation, Prahalad and Ramaswamy (2004) suggest that value can be co-produced. Value can also be co-created based on co-creation experiences. Furthermore, individual experience is a crucial input to the co-creation process of social or industrial innovation, which includes the value-creation process.

3. Benefits of participatory governance

Participatory governance offers the possibility to deal with complex and contested policy issues, such as industrial development projects that involve several stakeholders and organizations, without the possibility of identifying a single decision maker or a defined group of stakeholders, but rather a diverse set of people with different perspectives, abilities and mandates (Komendantova et al., 2018). Hence, participatory processes can facilitate the negotiation of compromise solutions involving a large variety of stakeholders with heterogeneous, difficult to reconcile views, interests, visions, plans, policy targets, etc. Many stakeholders can be included through complex interactive processes, enabling

policymakers to address a number of intractable challenges (Birkland, 2011). The industrial policy domain covers several stakeholders such as decision-makers, analysts, support employees, policy researchers and professionals from various academia, civil society, private and policy organizations. These stakeholders are also active at various levels of governance, from local to regional, national, continental and global levels.

According to Poppe et al. (2018), participatory processes have several advantages over non-participatory ones, such as integration of local knowledge and expertise, improved measures, decisions and mutual learning, which

are expected to result in higher levels of policy implementation. We describe these benefits in more detail below. However, it must also be borne in mind that experimentation is a key tenet of any participatory process, since it is difficult to determine at the outset how stakeholders would behave, or even whether all necessary stakeholders are both in place and willing to engage in collaborative policy-making processes. We therefore also describe various tools to facilitate the process and the different phases of process organization.

3.1.   Integration of local knowledge and expertise

Participatory processes allow for integration of scientific expert knowledge, with practical knowledge existing in local communities. Industrial infrastructure projects can be beneficial for local communities, but they also create challenges including land use conflicts and protests if they violate land rights and erode culture and the livelihoods of the local and indigenous communities (Ross, 2008). The socio-environmental impacts of industrial infrastructure projects can be substantial for indigenous populations. Involvement of the local population and their knowledge during the planning, implementation and monitoring phases of natural resource management can reduce socio-environmental impacts (Kearney et al., 2007).

However, tokenism is one of the most frequent forms of participation when feedback does not necessarily affect decision-making. 'Tokenism' means that the knowledge of and feedback from local communities is collected through various forms of stakeholder dialogue or data collection, though there is no guarantee that their inputs will feed into the decision-making process. The aim of tokenism is to inform decision-making processes but may sometimes also only be used to give an impression of an inclusive process, for example, when various minority groups are included in a decision-making process to give the impression of diversity, social inclusiveness and engagement (Oxford English Dictionary). Some academics take their criticism of token-

ism even further and describe it as a means to prevent an outcry (e.g. by including a minority group representative) and to make it appear that all groups are being treated equally (Jackson and Braboy, 1995).

Tokenism can lead to "stakeholder fatigue" when people stop believing in the benefits of participation. The practice of assessing the social impacts that can be derived from industrial projects is insufficiently addressed in several countries. It is crucial to assess the social impacts of industrial infrastructure projects in more detail and to pay more attention to cumulative impacts, which can be influenced by the size, scale and temporality of a project.

In many countries, the legal system to determine "major" impacts is quite loose and the roles and responsibilities of different stakeholders for socio-environmental impacts are not entirely clear. Frameworks for monitoring impacts need to be further developed, with unrestricted data available to anyone. Frameworks for equal and fair compensation schemes for local communities for the projects' costs and risks should also be further developed. New guiding mechanisms are also required for long-term sustainable environmental development and the protection of culturally valuable socio-ecological systems because the current mechanisms cannot adequately capture these. Thus, various participatory procedures, such as socio-environmental impact assessments, need to be improved and standardized.

3.2.   Improved actions and decisions

Through a participatory process, decision-makers, planners or community members can gain a better understanding of a system that is built on practical experience, which can therefore be readily translated into improved actions and decisions. Ideally, participation can improve societal learning of all stakeholders involved.

One example is the BestGrid approach which brought together transmission system operators (TSOs) and non-governmental organizations (NGOs) to discuss and understand the nature of stakeholders' concerns about the deployment of electricity transmission grids in Germany, Belgium and the United Kingdom. The process of construct-

ing, extending and upgrading electricity grids in Europe is currently extremely slow, and stakeholders are questioning the need for infrastructure projects as well as the underlying assumptions determining this need. Failing to reach an agreement with local stakeholders on the deployment and sites of projects can cause lengthy and costly delays of the planning process and may even jeopardize the project altogether. Through the BestGrid process, the measures and decisions on the deployment of electricity transmission grids could be improved (**Box 1**).

The introduction of polycentric governance schemes represents another opportunity for improved actions and policy decisions. It is a system that comprises multiple centres of decision-making and co-production at different levels. In the polycentric governance system, stakeholders discuss the common good rather than a private or public one. It provides opportunities for the co-production of industrial policy by various stakeholder groups.

Energy policy is one of the areas where implementation of polycentric governance is currently being dis-

cussed. Emerging technologies and changing attitudes towards energy generation, transmission and distribution create various options that facilitate participation in energy transition. The emergence of distributed energy systems, which might lead to polycentricity in the governance of such a transition, also creates a need to reframe the discourse from social acceptance of certain technologies towards engagement, and from focusing on specific technologies to social innovation and new forms of governance.

Climate and energy model regions are an example of polycentric governance. This approach is not aimed at providing information and educating the public; it aims to listen to people and to provide them with a variety of options and alternatives to make informed choices about services that affect their communities (**Box 2**). Targeted information campaigns about possibilities of participation can significantly facilitate participation, but there is also a need to understand the role of emerging information channels such as social media.

3.3.   Mutual learning

Participatory processes seem useful for achieving sustainable and integrated industrial development when multiple actors are integrated into the policymaking process and can voice their opinions and recommend solutions on a platform with other stakeholders. In such contexts, participants are more likely to apply the understanding of the new system in the long term, beyond the temporal and planning targets of the initial participatory processes. Participation can facilitate system learning, thereby "implanting" a foundational understanding tailored to resolve similar long-term contested decision arenas.

A second way of understanding the benefits is through citizen inclusion and the use of participatory processes for involving local expertise and knowledge into contested

Box 1: BestGrid approach

The BestGrid approach provided an opportunity to involve a select group of targeted stakeholders in various pilot projects on the deployment of electricity transmission grids. The funds to enable national and local NGOs, such as Germanwatch and BirdLife, to be directly involved in designing the TSOs' activities on engagement and the environment were also provided. This gave the NGOs an opportunity to provide inputs on action plans and to provide guidance on how to address environmental protection and engagement concerns. The BestGrid approach goes beyond the level of tokenism, as it allows for a stronger and systematic collaboration between TSOs and NGOs. This can be considered an innovative approach because the two groups are involved in the same project, their collaboration is voluntary, is based on the recognition of common interests and respect for each other's priorities, and guided by an independent organization (Komendantova et al., 2015).

processes. One example is industrial policy planning or industrial infrastructure siting for conflict-free implementation of projects and for increasing the quality of life in hosting communities. Increasingly, collaborative industrial planning procedures delegate responsibility for the implementation of projects or for certain parts of decision-making processes to non-governmental stakeholders, such as the private sector, academia and civil society. In this case, a participatory process can help identify compromise solutions between the various stakeholders involved but also increase the legitimacy, transparency and acceptability of the outcomes of the decision-making process.

The energy strategy process in Jordan is an example of how participatory governance and dialogue contributed to a better understanding among various stakeholder groups (**Box 3**).

Box 2: Improved decisions and measures in climate and energy model regions

Climate and energy model regions in Austria are committed to including a high degree of renewable energies (up to 100%) in their energy mix and set ambitious goals to achieve this. Some of these regions already had a system in place that allowed citizens to participate in decisions concerning the energy transition in their region. The research findings indicate an increase in the level of awareness about energy transitions and a willingness to pay up to 10% more for electricity from renewable energy sources when people have the option to get involved in decisions on this issue (Komendantova et al., 2020). Interestingly, having the option to participate did not increase the number of people who participated in decision-making processes on the energy transition, but having that option increased the level of trust towards policymakers who implement energy transition. Most people who want to participate in decision-making processes also want to participate in the process of selecting the technology or the site for the renewable energy project, while participating in the financing of projects is the least desirable objective. People who indicated that they were not interested in participating in decision-making processes stated that they did not have adequate information or time. The number of people who did not want to participate because they deemed that participation was not important was minimal. Overall, the research results confirm the willingness of people to participate in decision-making processes, but conditions for participation need to be created (Komendantova et al., 2020).

Box 3: Participatory governance to improve mutual learning and understanding

The Jordanian government is currently considering several electricity generation technologies outside the country. There are also considerable differences in the perceptions of benefits, risks and of decision-making experiments and focus group discussions conducted within the scope of the multi-criteria

4. Organization of participatory process

There are several ways to design and manage a participatory process, but no clear principles exist to help stakeholders choose the most successful approach. Traditionally, experts and scientists were considered to be best positioned to make choices about development challenges (Perhac, 1996). Some scholars suggest that stakeholder involvement in complex decisions may be limited in terms of capacity and knowledge; for example, stakeholders' ability to understand the concepts of "uncertainty" and "variability" may be limited, hence scientists should take the lead in the decision-making process (Rowe and Frewer, 2000). The need to include a broader range of stakeholders is becoming more widely acknowledged, as expert knowledge might be limited or openly biased (KICS, 2011), especially when compared to local knowledge on the ground. Furthermore, experts sometimes disagree amongst each other (Jasanoff, 1997), and local knowledge may be crucial in resolving conflicts.

Based on the above, this section describes four basic steps to follow as part of the organization of a participatory process. These steps can be designed and implemented to increase the chances of capturing all potential benefits that can be linked to participatory processes and stakeholder engagement. The proposed steps primarily follow from socio-environmental and systems thinking, and from the innovation participatory models reviewed in Section 2. All of these steps allow for the integration of knowledge and expertise of various stakeholders, including local communities. Opportunities for mutual learning are provided during all stages of the participatory process but especially during those where interaction among stakeholders serves to inform decision-making experiments, such as ranking of criteria and the development of compromise solutions (Komendantova et al., 2018) or decision-making experiments included in various games (Komendantova et al., 2021), focus groups discussions and other elements of stakeholder dialogue. A socio-environmental, systemic approach and innovation models can facilitate the organization of participatory processes. As discussed in Section 6, digital tools can be applied throughout the entire process to facilitate stakeholder engagement and thus turn into an element of engagement themselves.

If properly designed, participatory processes offer the potential to identify and develop compromise solutions for conflicting opinions about various policy targets, sectors or stakeholders' positions. Moreover, the implementation of various steps of the participatory process can lead to improved decisions and measures. The participatory process could also become an element of an enhanced decision-making process and improve the implementation of decision-making outcomes. In addition, participatory processes can help identify truly innovative solutions by transforming a given situation. This can bring benefits for all stakeholders over the long term. **Figure 1** illustrates the four steps of the participatory process.

4.1. Preparing the process

The first step in the co-creation procedure is to develop a detailed mapping of stakeholders who are of relevance for industrial policymaking. Stakeholder mapping is a tool used in research on participatory governance, which allows identification of the most relevant stakeholders to be invited for participatory processes. But it is also the most essential element for initiating the engagement process as such. Depending on the method(s) used to conduct the mapping, the latter can also be the engagement element, for example, when consultation with an initial set of stakeholders leads to the identification of additional relevant stakeholders in what can be characterized as a snowballing process.

The term "stakeholder" and the notion of "having a stake" were originally used to designate investors who had