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RESEARCH ARTICLE

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How might we co-design energy transition policy in old industrial regions?

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Abstract

There has been growing interest in collaborative approaches such as co-creation and co-design for strategic energy planning and energy policy design. However, existing analyses have conceptualized collaboration in rather vague terms, have focused primarily on the involvement of industrial actors and have been set in Western Europe. In this paper, we assess an inclusive energy transition policy co-design experiment in Ida-Virumaa, a region in Estonia historically dominated by the oil shale industry and with scarce experience of cross-sector collaboration to date. The experiment had a twofold purpose: (1) to establish a network of people interested in renewable energy and energy efficiency in the region, (2) to develop and validate proposals for policies that could accelerate the energy transition. We found that expectation alignment, social learning, resource mobilization and developmental evaluation can be used to create synergy among participants and can lead to innovative policy proposals. However, collaboration increases the time needed for policy development, the existence of alternative venues can undermine the collaborative process, fluid roles can create confusion around implementation and there might not be many resources to build on in old industrial regions. We conclude that it is still relatively easy to co-design energy policy or a strategic energy plan even in a setting that does not enjoy a well-developed collaborative culture but it is much more challenging to co-create a strong network of committed actors with clear roles in the implementation of policies and plans.

KEYWORDS
co-design, collaborative governance, energy policy, energy transitions, social learning

1 | INTRODUCTION

To meet the European Commission's goal of climate neutrality by 2050, regions across Europe need to contribute to the energy sector's transition from fossil fuels to renewable energy. This transition is a very complex change that requires extensive cross-sector collaboration to integrate electricity, thermal, and gas grids with storage technologies and achieve optimal solutions for the overall energy system (Lund et al., 2017; Mathiesen et al., 2015). However, in most areas, only a limited number of incumbent energy companies have the capacity and capital to initiate large energy projects or are able to do so within the existing regulatory framework. At the same time, these companies tend to use their power to resist change and lobby for regulations that would uphold the status quo (see e.g., Bonneuil et al., 2021; Supran & Oreskes, 2021). For national and local governments, the need to curb greenhouse gas emissions is often overshadowed by more pressing short-term issues such as the risk of decreasing energy security and energy equity or increasing regional

unemployment in heavily locked-in regions (Sillak & Kanger, 2020). Therefore, policymakers and planners sometimes make decisions unilaterally or behind closed doors, typically engaging only a limited number of trusted experts or lobbyists, while public participation is limited to political bargaining in unstructured forums.

There has been growing interest in collaborative approaches such as co-creation and co-design for strategic energy planning and energy policy design (Gjørtler Elkjær et al., 2021; Itten et al., 2021). These approaches bring public and private actors together in collective forums to engage in consensus-oriented decision-making (Ansell & Gash, 2008). The shift toward this kind of collaborative work in the energy sector started almost 20 years ago in the Netherlands, where "transition management" was first used to steer multiactor collaboration in designing long-term energy policy (see e.g., Kemp et al., 2007; Kern & Smith, 2008). However, existing analyses of this trend have conceptualized and assessed collaboration in rather general terms and focused primarily on the involvement of the incumbent industry without much attention to the third sector or local communities (Hendriks, 2008, 2009). In addition, most studies have been conducted in Western Europe, and the feasibility of similar approaches in regions characterized by a stronger lock-in to fossil fuels, a shorter tradition of democracy, and a scarcer experience of cross-sector collaboration is largely unknown.

In this article, we build on the co-design framework proposed by Sillak et al. (2021) to assess a recent energy transition policy co-design experiment in Ida-Virumaa, a region in Estonia historically dominated by the oil shale industry. The goals of the co-design experiment were (1) to establish a network of people interested in renewable energy and energy efficiency in the region; (2) to develop and validate proposals for policies that could accelerate the energy transition; and (3) to summarize lessons and suggestions for similar processes in the future. The authors took part in the process as participants-as-observers on behalf of the Estonian Green Movement. The article answers the following research questions: (1) How were actors recruited and involved in the policy co-design experiment?; (2) How were expectation alignment, social learning, resource mobilization, and developmental evaluation promoted?; (3) How did these activities influence the effectiveness, efficiency, and social acceptability of the resulting policy proposals?; and (4) What transferable lessons can be learned for energy transition policy co-design in other regions?

The article is structured as follows: Section 2 provides the theoretical framework; Section 3 explains the case selection, data collection, and methods; Section 4 gives an overview of the policy co-design experiment; Section 5 analyses the process with reference to the theoretical framework to address the first three research questions; and Section 6 concludes with lessons for energy transition policy co-design elsewhere.

2 | THEORETICAL FRAMEWORK

2.1 | What is collaborative policy design?

Policy design can be defined as "the deliberate and conscious attempt to define policy goals and connect them to instruments or tools expected to realize those objectives" (Howlett et al., 2015: 291). While policy development tends to occur behind closed doors in the traditional managerial approach, co-creation and co-design provide more open approaches to policy design and have recently emerged as a popular alternative (Ansell & Torfing, 2021). Co-design has been defined as "a design-led process, involving creative and participatory principles and tools to engage different kinds of people and knowledge in public problem solving" (Blomkamp, 2018: 731). Research shows that under ideal conditions, co-design fosters synergy, learning, and commitment, and can thus help tackle persistent problems and spur systemic innovation (Ansell & Torfing, 2014; Torfing, 2019; Torfing & Ansell, 2017). However, the rising interest in co-creation and co-design has not always been accompanied by sufficient theoretical rigor when it comes to assessing their practical application. For instance, Itten et al. (2021) admit that there has been very little critical and evaluative research on co-creation in the field of strategic energy planning and policy.

2.2 | Involvement and roles in co-design

Drawing on this insight, Sillak et al. (2021) recently outlined a framework for systematically assessing and guiding co-design[1] in this context. The framework focuses on three key aspects of the co-design process: involvement, activities, and outcomes (Figure 1). A prerequisite of a fair process is that a wide range of actors from the state, market, community, and third sector are involved in the initiation, design, and implementation of policy. Furthermore, some of the actors are likely to be challenged to take on new roles that may considerably differ from their usual ones. Typical roles in collaborative processes include (1) official leaders or conveners, who have the authority or legitimacy to convene and launch collaboration; (2) facilitators or

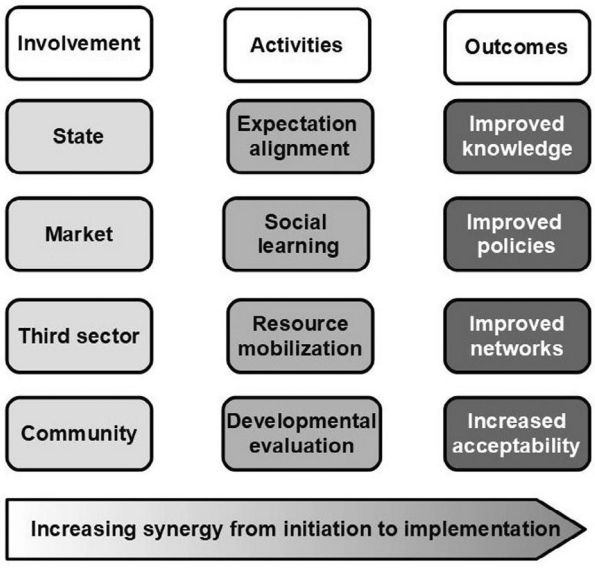

FIGURE 1 Framework for assessing policy co-design (based on Sillak et al., 2021)

brokers, who use process skills to facilitate collaboration; (3) encouragers or sponsors, who provide the necessary resources to support collaboration; (4) followers, who join collaboration convened or encouraged by others; and (5) champions, who focus intently on keeping the collaboration going, accomplishing its goals, and publicizing its success (Bryson & Crosby, 2006; Scott & Thomas, 2017).

2.3 | Activities in co-design

2.3.1 | Expectation alignment

Opening up the policy process to participation from a broad range of actors often improves the legitimacy and acceptability of the process and its outcomes, but it also renders decision-making more difficult and less effective (Börzel & Panke, 2007). This is why distinctive facilitating activities should be used to strengthen the link between involvement and outcomes. We propose four such activities. First, the articulation and alignment of expectations, defined as "statements about the future – uttered or inscribed in texts or materials that circulate." are used for establishing common ground to work on (van Lente, 2012). Participants may have expectations about the policy design process itself as well as the resulting policies and their implementation. In the context of energy policy, policy design, and implementation are in turn heavily dependent on expectations about the technologies of energy production, consumption, and storage. Such expectations might be either project-specific, that is, related to the expected feasibility and profitability of a specific technological project, or generalized, that is, related to the expected market penetration and diffusion rate of a technology and the expected role of that technology in a future society at large (Ruef & Markard, 2010). These expectations might be for what must necessarily happen, what will probably happen, what should hopefully happen, or what would ideally happen (Olkkonen & Luoma-aho, 2014). If expectations have been articulated, participants (with the help of facilitators) can strive toward aligning them by either changing their own expectations or persuading others to change theirs (Luoma-aho et al., 2013). In this way, the articulation and alignment of expectations comprise a key enabler of coordination between different actors in governance processes (Hielscher & Kivimaa, 2019; Konrad & Palavicino, 2017).

2.3.2 | Social learning

Second, professionally facilitated social learning among participants can improve awareness of mutual expectations, support the co-creation of knowledge, foster the convergence of goals, and promote concerted action (Collins & Ison, 2009). Social learning is a change in understanding that occurs through social interaction and goes beyond the individuals involved to become situated within wider social units or communities of practice within society (Reed et al., 2010). The learning involved can include surface level knowledge of alternative solutions to the same problem (known as single-loop learning), but may also extend to the framing and re-framing of a problem and its context (double-loop learning) or even the reconsideration of what is understood as valuable knowledge (triple-loop learning) (Argyris & Schön, 1974; Tosey et al., 2012). Triple-loop learning requires deep reflection on the underlying norms, values, and worldviews that guide the way we learn (Johannessen et al., 2019) and can therefore lead participants to change their interconnected patterns of knowing, doing, and being (Steyaert & Jiggins, 2007). In a public policy context, first-order changes preserve the broad continuities in policy, while second and third-order changes are marked by disruption in the overarching policy discourses or institutions (Hall, 1993; Pahl-Wostl, 2009).

2.3.3 | Resource mobilization

Third, we know from the research on social movements that the success of any collective action depends on resource mobilization (McCarthy & Zald, 1977). Five types of resources can be distinguished in this context: (1) material resources like money, equipment, and supplies; (2) human resources like labor, experience, skills, and expertise; (3) social-organizational resources like organizations, institutions, infrastructure, social ties, and networks; (4) cultural resources like symbols, beliefs, values, identities, and behavioral norms; and (5) moral resources like legitimacy, authenticity, and solidarity (Edwards et al., 2019; Edwards & McCarthy, 2004). In addition, there are four basic mechanisms or exchange relationships through which actors can gain access to and mobilize these resources: (1) self-production, whereby the collective mobilizes resources by producing those resources themselves; (2) aggregation, whereby the collective converts resources held by dispersed individuals or groups into collective resources; (3) co-optation, whereby the collective exploits resources that belong to an existing organization for new purposes; and (4) patronage, whereby the collective is bestowed with substantial resources by an individual or organization who usually exercises some degree of control over how the resources can be used (Edwards et al., 2019; Edwards & McCarthy, 2004).

2.3.4 | Developmental evaluation

Fourth, developing new policies and institutions requires developmental evaluation. Conventional policy or program evaluation is usually concerned with monitoring improvement, tracking implementation errors, and assessing outcomes according to predefined goals. Developmental evaluation, in contrast, is aimed at adapting programs to changing circumstances, applying effective principles to new contexts, improvising rapid responses in crisis conditions, and catalyzing systematic change (Patton, 2011; Patton et al., 2016). This is useful in settings where goals are emergent and changing rather than predetermined and fixed, and where time constraints are fluid and forward-looking rather than artificially imposed by external deadlines (Patton, 2011; Patton et al., 2016). The developmental evaluator typically becomes part of the innovation design team and helps them evaluate development, interpret evaluation findings, analyze implications, and apply results to the next stage of development (Patton, 2011). The evaluator facilitates discussion about

how to evaluate whatever happens and intervenes with evaluative questions and data to support learning and innovation. Therefore, developmental evaluation can trigger triple-loop learning that goes beyond the surface level toward a deeper understanding of systems and the action needed for changing them.

2.4 | Outcomes of co-design

Mutually reinforcing relationships exist between the aforementioned activities. For instance, the honest articulation of expectations and the use of evaluative questions in a collaborative setting can increase the alignment of expectations, foster social learning, and help mobilize resources. The exchange of resources can in turn be an indicator of collective learning and thereby further improve awareness of mutual expectations and promote concerted action (Collins & Ison, 2009; Knoepfel & Kissling-Näf, 1998). Ideally, these reinforcing relationships can lead to synergy wherein the combined effect of (material, human, social-organizational, cultural and/or moral) resources at the disposal of every participant becomes greater than the sum of their separate effects (Ansell & Torfing, 2014). Synergy can in turn result in improved outcomes in terms of either effectiveness (new knowledge, visions, policies, networks, or institutions), efficiency (saved time and costs), or social acceptability (Sillak et al., 2021). Social acceptability (or legitimacy) refers to the extent to which shared meaning and consensus between participants is generated by the co-design process and/or the extent to which apathy or resistance to energy transition is replaced by drive and passion for it. This can be evident at multiple levels, including the macro-economic (the incumbent and emerging industries), the meso-political (government, interest groups, and the general public) and the micro-social (local communities) (Fournis & Fortin, 2017).

While these are the ideal outcomes of collaboration, they are often also accompanied by specific challenges of their own. These include the participants' diverging backgrounds and methods of operation, lack of time and incentives to participate, unequal power dynamics, lack of knowledge and skills required for facilitation, lack of well-defined bureaucratic rules and procedures for collaboration, an unclear division of roles, distributional conflicts about who pays the costs and who reaps the benefits, struggles with assigning responsibility and holding to account, and difficulties with measurement and evaluation (Bianchi et al., 2021). Our aim is to assess whether and how these challenges were overcome in a recent energy transition policy co-design experiment in Ida-Virumaa and to draw transferrable lessons from that process. Before moving to the description of the experiment (Section 4), we explain the case selection, data gathering approach, and analytical methods (Section 3).

3 | RESEARCH DESIGN AND METHODS

3.1 | Case selection and context

The energy transition in Estonia has been a heavily contested process with little progress so far. Historically, the Estonian electrical supply has been almost wholly reliant on centralized production from oil shale in the Ida-Virumaa region (Holmberg, 2008). The need to reduce greenhouse gas emissions has been overshadowed by more pressing issues such as energy security, energy equity, and regional unemployment due to Ida-Virumaa's dependence on the three oil shale companies Eesti Energia, Viru Keemia Grupp, and Kiviõli Keemiatööstus for jobs and public revenue (Sillak & Kanger, 2020). The increasing calls in recent years from the renewable energy sector and environmental organizations to develop the renewable energy system have been met with mixed and often contradictory responses from the national and regional governments and the oil shale industry. The long history of disagreement and distrust and the scarce experience of cross-sector collaboration have not created favorable conditions for collaborative policy design.

In 2020, the European Union introduced the just transition mechanism to motivate member states to replace fossil fuels with renewable energy while alleviating negative socio-economic consequences in highly affected regions like Ida-Virumaa. To be eligible for funding from the just transition mechanism, Estonia needed to present a territorial just transition plan. The aim of the just transition plan was to set out the regional challenges, development needs, and objectives to be met by 2030 with regard to the transition toward a climate-neutral economy (European Commission, 2019). It was agreed in Estonia that the just transition plan would build on existing strategic documents that were being updated at the time, such as the Ida-Virumaa regional development strategy for 2030 and the Supplementary Ida-Virumaa action plan. The Ministry of Finance was made responsible for drawing up the action plan while the association of Ida-Virumaa Municipalities (IVOL) and the Ida-Viru Enterprise Center (IVEK) were entrusted with creating the development strategy.

They decided that the development strategy would consist of four complementary plans: the green plan ("plan G," focused on greening the economy); the carbon plan ("plan C," focused on carbon capture and utilization [CCU]); the business plan ("plan B," focused on diversifying the business sector); and the education plan ("plan E," focused on educational change) (Ida-Virumaa Omavalitsuste Liit, 2021). For the creation of the green plan, IVOL and IVEK partnered with the Estonian fund for nature (EFN), Estonian Green Movement (EGM), and Environmental Law Center (ELC),[2] which in turn commissioned DD StratLab (DDS), Social Innovation Lab (SiLab) and the Institute of Baltic Studies (IBS)[3] to facilitate the process. The aim of this move was to use the facilitators' experience to improve the planning process and its outcomes. An important consideration in choosing the facilitators was that all three were third-sector organizations with social missions. It was also seen as important that they complemented each other with different expertise in co-design, network building, and impact assessment.

The co-design of renewable energy and energy efficiency policy constituted one part of the green plan (Figure 2). The authors of this study participated in this process as staff of the Estonian Green Movement (see Section 3.2 below). The process started with an introductory meeting between the facilitators and partners on September

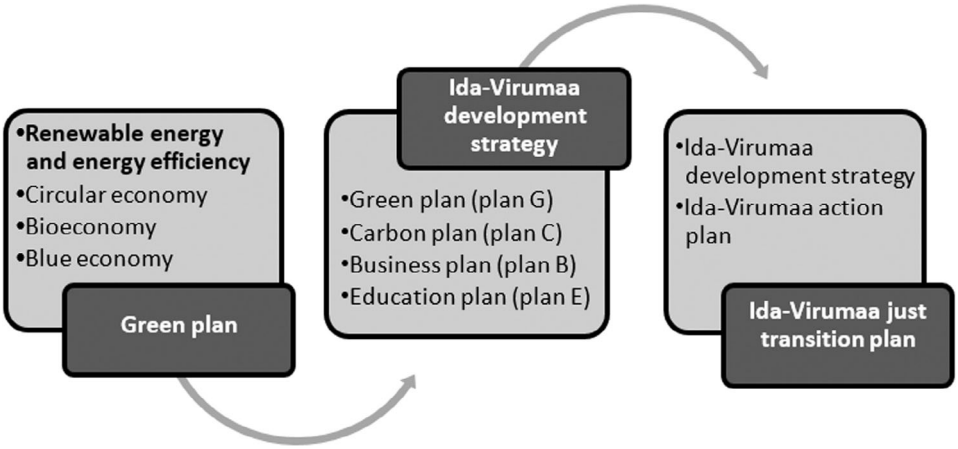

FIGURE 2 The relation between the developed renewable energy and energy efficiency policy proposals (in bold) and other strategic policy documents in Ida-Virumaa

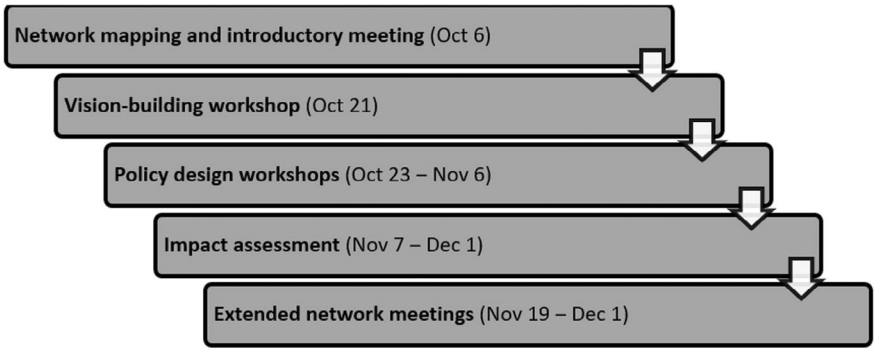

FIGURE 3 Timeline of the policy co-design process

15, 2020,[4] and ended with a final meeting on December 18. The tight time frame was due to delays in funding and a strict deadline set for the TJTP by the European Commission. The initial intention was to hold all-day physical meetings, but due to COVID-19, all meetings were moved online. In the course of the process, the participants passed the initiation phase, consisting of context and network mapping, an introductory network meeting and a vision-building workshop, and the design phase, consisting of eight thematic policy design workshops, impact assessment and two extended network meetings (Figure 3).

We chose to take a case study approach, following and analyzing the co-design process as it happened. A case study enables the researcher to investigate a process within its real-life context, use multiple sources of evidence, and follow changes over time (Yin, 2018). The drawbacks of case study research are that it may contain a bias toward verification and offer little generalizable theoretical knowledge (Flyvbjerg, 2006). However, we believe that in complex processes where technological and social change is intertwined, concrete and context-dependent knowledge is often more valuable than generalized knowledge. Still, to address the inherent limitations of the approach, we selected a case that could be considered crucial (Gerring, 2007) or critical (Flyvbjerg, 2006), meaning that collaborative policy design is least likely to succeed here. It can, therefore, offer valuable general insights into the effectiveness of co-design: If it succeeds in the case where it is least likely to, it will probably also succeed in other cases as well.

3.2 | Data and methods

The data was collected through participant observation and interviews conducted during the co-design process. The authors participated in the process as experts representing the Estonian Green Movement but also made observations for this research, a dual role that can be characterized as participant-as-observer (Gold, 1957). On one hand, this role enabled the authors to gain unique observation data that could not have been acquired from secondary sources. It also allowed them to maintain a sufficient level of objectivity as they were not the facilitators of the process. On the other hand, the authors did represent one of the organizations that commissioned the facilitators and worked in close cooperation with them in designing the process. This might have influenced the objectivity of the feedback given by the other participants in the interviews. Overall, we believe that in this particular case, the advantages of the participant-as-observer role outweigh the disadvantages.

The observation technique was a mix of focused and selective observations. Fieldnotes based on the observational dimensions proposed by Spradley (2016) were made at all meetings and events. General and concise notes were made on the space, time, and goals of every event as well as the objects, actors, and feelings involved. More specific notes were made (when possible) on activities such as the articulation and alignment of expectations, social learning, resource mobilization, and developmental evaluation (see Appendix A for an example of the fieldnotes). These categories were derived from the

theoretical framework presented in Section 2.2. Eight interviews were conducted by phone on December 11 to obtain more data on how the participants themselves assessed the process and its outcomes. The interviews were structured on the basis of the theoretical framework (see Appendix B for the interview guide). At least one participant from each sector (state, market, third sector and community) and each thematic group (wind energy, solar energy, energy efficiency, energy storage) was included. The next section presents a general ethnographic description of the process compiled on the basis of the fieldnotes and interviews.

4 | CO-DESIGNING REGIONAL RENEWABLE ENERGY AND ENERGY EFFICIENCY POLICY IN IDA-VIRUMAA

4.1 | Initiation phase

4.1.1 | Context and network mapping

The initiation phase consisted of context and network mapping, an introductory network meeting, and a vision-building workshop. The very first meeting involved only the partners and facilitators and the process was started by establishing an overview of the context, including similar ongoing processes. The goal of this step was to arrive at a clear idea of how exactly the green plan would contribute to the just transition plan (see Figure 2). This was followed by network mapping based on Mendelow's matrix, a tool which helps groups to collectively brainstorm and categorize actors based on their influence on and interest in the focal issue (Mendelow, 1981). The matrix allows the identification of actors whose participation in the process is necessary and actors who should simply be kept informed or satisfied.

After the initial network mapping, social network analysis (SNA) was performed to document the relationships between the actors and identify patterns in the network. For this, all the identified actors were presented with a list of other actors along with the question: "With whom from this list have you collaborated on the development of renewable energy and energy efficiency in Ida-Virumaa in the past 12 months?" Analysis of the responses revealed that the central actors in the network were regional government organizations, national ministries, environmental organizations, and renewable energy industry associations (Figure 4). The results complemented the mapping exercise by establishing which actors were central and most influential in the existing network and therefore essential to involve. Identifying the central actors also provided a way to reach peripheral actors who had fewer ties with other actors in the network.

4.1.2 | Introduction and vision-building

After all the necessary actors were identified and contacted (see Appendix C for an aggregated list of actors), an introductory network meeting was arranged. The aim of the introductory meeting was for participants to get to know each other and to share their expectations and doubts about the process and its outcome. The participants expressed an expectation that the process facilitation would be time-efficient and professional. In addition, they wished for the local communities as well as political decision-makers to be included as much as possible and for the process to complement, rather than compete with, other ongoing developments. In the course of the process, they hoped to engage in heated yet constructive debates and to build a network that would last. With regard to the outcome, they hoped they would reach an ambitious and optimistic plan that would lead to quick and thorough implementation. The participants also expressed concern that they would not have enough time to contribute because they were overburdened with other duties.

The final step of the initiation phase was a vision-building workshop. The participants were asked to individually write down six to eight things that they would like to see happen in Ida-Virumaa by 2030 as a result of the green plan. The individual visions were then grouped by the participants, forming ten clusters: (1) world-class research and development; (2) systemic policy instruments for households in transition; (3) greater local energy security; (4) green laboratories; (5) an end to electricity generation from oil shale; (6) improved social and ecological well-being; (7) green and successful communities; (8) green transformation in local government; (9) green transformation in the industry; and (10) a new narrative for Ida-Virumaa.

4.2 | Design phase

4.2.1 | Developing policy proposals

In the design phase, the facilitators used a combination of co-creation and design thinking methods. Design thinking is a creative and systematic approach to analyzing problems and identifying solutions by involving the people who hold the solutions and/or whom the solutions are intended to benefit (IDEO, 2020). This approach makes use of both divergent and convergent thinking by first exploring the problem in general and then defining it more in detail, generating a number of possible solutions to the problem and then deciding on specific ones to implement (Design Council, 2019). For these reasons, it has been identified as a fitting method for collaborative policy design (Ansell & Torfing, 2014).

The participants divided themselves into four thematic groups with 4–7 participants in each. The groups were focused on wind energy, solar energy, energy efficiency, and energy storage; these thematic areas had previously been agreed on between the facilitators and the partners. For each thematic group, two workshops were held. According to the initial plan, the first workshop should have started with exploring the problem, but due to time constraints, this was done individually by the participants as preparation for the workshop. The participants were asked to identify existing barriers to increasing wind and solar energy production, energy efficiency, or energy storage in Ida-Virumaa. The first workshop then started with the facilitators posing a "How might we…" question, for example, "How might we

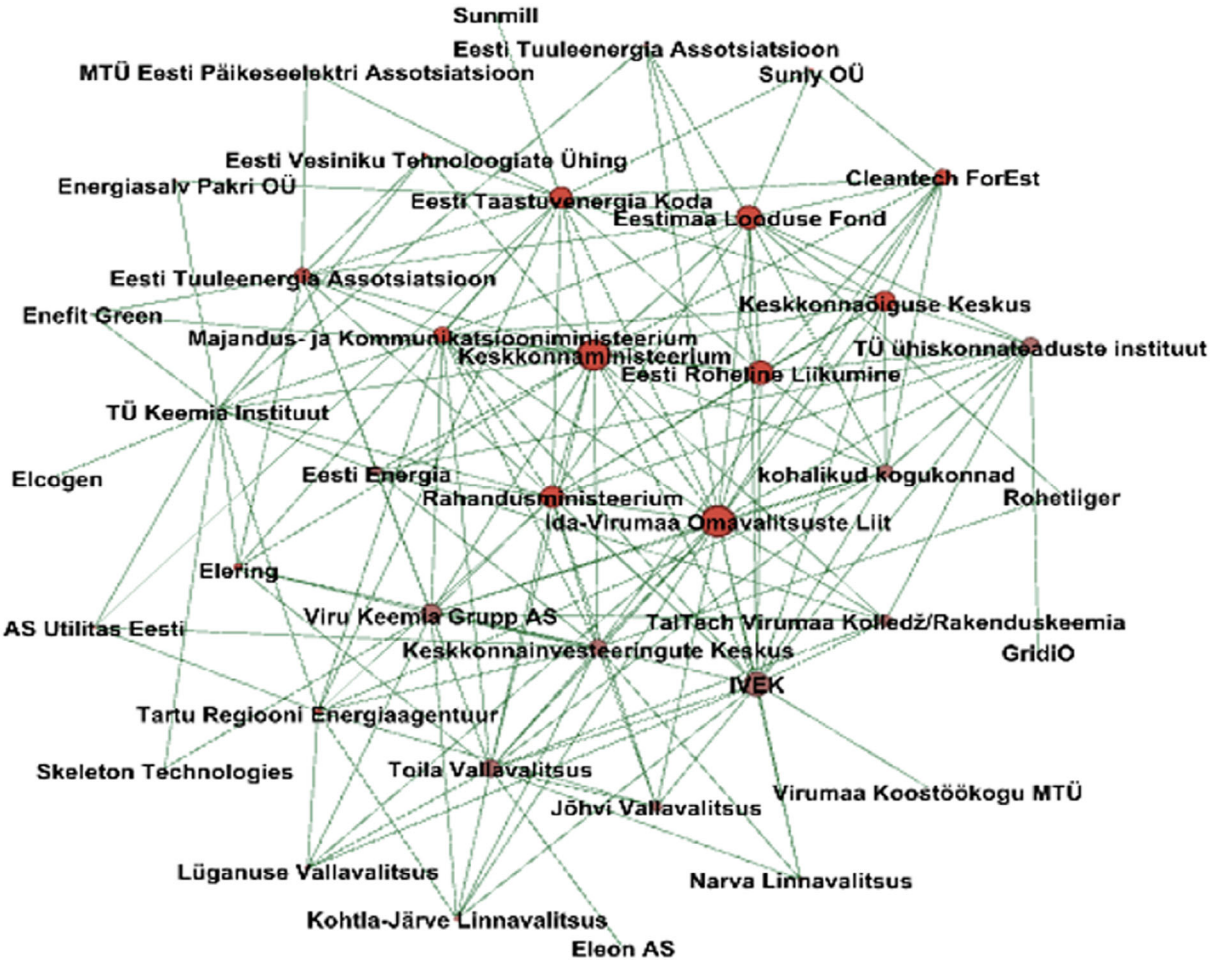

FIGURE 4 Sociogram of the network (size of the red dot refers to the number of ties with other actors). *Source*: Maris Jõgeva (SiLab) [Color figure can be viewed at wileyonlinelibrary.com]

produce more wind energy in Ida-Virumaa?". Based on a digital worksheet in Miro prepared by DDS, the participants were asked to individually brainstorm answers to this question. The proposed solutions were then grouped together in clusters by the participants to identify "core solutions" to the problem. The solutions included grants, loans, and regulatory changes as well as communication campaigns, social and educational services (see Appendix D for the full list of proposals).

4.2.2 | Impact assessment

From the core solutions developed by the group, each participant then picked one or two for which to conduct a predictive impact assessment based on a worksheet prepared by IBS. This was intended as an individual exercise in preparation for the second workshop, although several participants took advantage of the network to request help from others or performed the task in pairs. The worksheet consisted of three parts. In the first part, participants were asked to describe their proposals in more detail, including the target groups, the actors responsible for implementation, the implementation period, and the amount of necessary investment. In the second part, participants were asked to fill out a form based on the PESTLE framework. This allowed the identification of the most important macroeconomic drivers and barriers to the implementation of the proposal along the political (P), economic (E), social (S), technological (T), legal (L), and environmental (E) dimensions (PESTLE Analysis, 2021). In the third part, participants were asked to outline the potential effects of the implementation of the proposal within 14 categories.[5] The categories were derived from the intended goals of other relevant strategies, such as the EU green deal and the TJTP. Participants working in pairs tended to need an additional prior meeting to settle the details of the proposal before assessing it.

In the second workshop, the impact assessment worksheets were discussed and reviewed one by one in the thematic group. Synergies between the policy proposals and their potential impacts were identified where possible. In order to finalize the impact assessment, the worksheets filled by the participants were then collected by IBS, which supplemented the preliminary impact assessments with additional desk research and systematized the potential effects into economic, environmental, and social impacts (see Appendix D for an overview of the policy proposals and their estimated impacts).

However, it should be noted that these were just very rough estimations and were not meant to give a summative assessment of the proposals (see Section 5.2.4).

4.2.3 | Extended network meetings

To gather additional feedback and validate the proposals, two extended network meetings were held. The extended network included additional policymakers and target groups who were not directly involved in the drafting of the proposals but who would presumably have an important role in their implementation. The first of these meetings was aimed at local actors, such as local government officials, community activists, and representatives of local energy companies; the second was aimed at nonlocal actors, such as representatives of national ministries and other government agencies. Each meeting was attended by approximately 50 people. The agenda included an overview of the proposals by DDS as well as more detailed presentations on three selected proposals. The participants were then asked to join breakout rooms to discuss the proposals. The discussion was guided by the following questions: (1) "Which local resources and endeavors can this proposal build on?"; (2) "What could hinder the implementation of this proposal?"; (3) "What support would local people need to help implement this proposal?". The meeting ended with a quick poll that asked: "How optimistic are you about the prospects of the energy transition in Ida-Virumaa?"

The policy proposals developed through this process for plan G, along with the proposals made under plans B, C, and E, were then included in the draft of the Ida-Virumaa development strategy for 2030 (Ida-Virumaa Omavalitsuste Liit, 2021). The draft subsequently underwent public consultation in January 2022 and is currently waiting to be approved by the municipal councils in the nine municipalities that are part of IVOL.

5 | ANALYSIS

In this section, we answer the research questions posed earlier, beginning with the involvement of actors, then moving on to activities and outcomes. The transferable lessons will be laid out in Section 6.

5.1 | Involvement and roles

Characteristically of co-design, a broad range of actors were included in this process, including representatives from 10 nongovernmental organizations, 11 governmental organizations, and 15 private enterprises. The nongovernmental organizations included environmental organizations as well as energy and clean-tech consultancies. The governmental organizations encompassed Municipal Governments, National Ministries, and Universities. The private enterprises mainly included renewable energy companies and their associations. Thirty four percent of the organizations attended all meetings and 59% attended all meetings but one (see Appendix C for full data on attendance). In addition, a number of local community members who were not members of specific organizations were involved in the extended network meeting. Power disparities between actors were addressed carefully by making sure that everyone was able to share their expectations and ideas and by consensually deciding on the ideas that would be taken forward (see Section 5.2.1).

The recruitment of participants was challenging for a number of reasons. Some municipal government officials decided not to take part because they felt that co-design was something done merely because it was new and fun and therefore a waste of time, or because there was no "demand" from the local citizens to tackle climate and energy issues. One participant believed that the municipal government officials did not see a reason to be involved because they lack resources to implement changes in the energy system and rely wholly on what the national ministries and the oil shale companies decide. On the other hand, some representatives of ministries opted out because they saw the development of regional policy proposals as exceeding the bounds of their authority or expertise. This situation created a "vacuum" where both municipal and national policymakers believed that developing a regional energy transition policy is the other party's duty, when in fact, they could have used the opportunity provided by the co-design experiment to develop it in collaboration. Notably, it turned out that the regional or municipal implementation of several policy proposals actually depended on the removal of obstacles in national legislation.

The local oil shale companies were also absent from the vision-building and policy design workshops, although they did attend the subsequent extended network meetings. Some participants believed that the industry preferred to use alternative venues that have been found to be attractive to actors who are confident that they can achieve their goals unilaterally rather than through collaboration (Ansell & Gash, 2008). For example, the representatives of Eesti Energia, Viru Keemia Grupp, and Kiviõli Keemiatööstus gave expert interviews as an input to plan C, which was focused on developing carbon capture and use or storage (Energex Energy Experts OÜ & Sihtasutus Ida-Virumaa Tööstusalade Arendus, 2020: 128–132). At the same time, both Eesti Energia and Viru Keemia Grupp were making plans for diversifying into the production of chemicals, with the former starting the construction of a new oil factory that would use oil shale as feedstock for plastics production (ERR, 2021a) and the latter exploring the idea of building a pulp factory that would enable the chemical enhancement of woody biomass (ERR, 2021b). The opinions of other participants were divided on whether the absence of the oil shale industry at the vision-building and policy design meetings ultimately benefitted or detracted from the process.

There was also some confusion around the roles of the various actors, as leadership of the process was divided between the regional government organizations (IVEK and IVOL), the environmental organizations (EGM, EFN, and ELC), and the process facilitators (DDS, SiLab, and IBS). For instance, the outsourcing of the role of process convener and facilitator from governmental organizations to the third sector initially raised questions over the legitimacy of the process and reduced the motivation of some participants. As government officials maintained a distance from the process, there was also confusion

around who would be responsible for the implementation of the proposals. It was suggested that collaboration could continue in the implementation phase either in an ad hoc manner or through the institutionalization of the emerging network as a new governance body (see Section 5.3.1). Alternatively, implementation responsibility could be delegated to another (newly formed) body such as a regional energy agency.

5.2 | Activities

5.2.1 | Articulation and alignment expectations

A large part of the introductory meeting was devoted to hearing and documenting everyone's expectations for the policy co-design process and its outcomes. The facilitators then tried to either make these expectations fit with what they had in mind by adjusting their own expectations for the process. After the introductory meeting, at least two fundamental changes were made in the process design by the facilitators. First, it became clear early on that the participants did not have the amount of time available that the facilitators had initially planned. As a compromise with the participants, the vision-building and policy design workshops, which had been intended to last a full day each, were shortened to 3 h. Consequently, the collective problem exploration, which is usually the first step of design thinking, was cut from the workshops and instead assigned to the participants as individual preparation (see Section 5.2.2). This change prevented a number of participants from dropping out and enabled a sharper focus. Several participants said that their initial skepticism about the process waned due to the quick adjustment of process design to align with the participants' expectations.

Second, due to time constraints, a choice had to be made between delivering the policy proposals and building a strong network. The facilitators decided to focus on delivering ambitious and optimistic policy proposals in a time-efficient manner, which they interpreted as necessary even if it came at the expense of network building (see Section 5.3.1). In the vision-building workshop, participants were invited to share their expectations for the long-term outcomes of energy transition policy in Ida-Virumaa, including expectations for specific technologies and their roles in the transition. The purpose of this exercise was to build consensus among the participants on the overall direction of the energy transition before moving toward more specific policy proposals. In this phase, the facilitators decided to keep the vision sufficiently broad in order not to restrict dialog and collaboration in the group. The vision thus accommodated both necessary expectations like increasing wind and solar energy and energy storage capacity as well as ideal expectations like citizen energy communities.

5.2.2 | Social learning

Learning in the vision building and policy design workshops was facilitated by first encouraging the participants to brainstorm individually, followed by a discussion in pairs and then in the whole group. The combination of individual and social learning was used to generate as many ideas as possible from the group. The changes that were made by the facilitators in the process design to fulfill the participants' expectations had a significant influence on learning. As mentioned above, the step of collective problem exploration, which would have enabled the participants to jointly delve into the root causes of problems, was cut to a minimum. Although necessary to keep the participants motivated and to deliver the policy proposals in time, this change greatly diminished the opportunities for double and triple-loop learning, which would have encouraged the participants to question existing problem framings and discourses or reassess their values and presumptions. Instead, the policy design workshops focused on single-loop learning through brainstorming solutions to existing problems that the participants had come up with individually. In addition, and again due to tight time constraints, solutions about which quick consensus could not be reached were set aside. However, the absence of the oil shale industry from the process meant that such proposals were relatively few.

Ideally, social learning can lead to a common understanding that spills over into the extended network or even becomes institutionalized in governance structures. The discussions during the extended network meeting showed that several ideas, like introducing a support scheme for citizens' energy cooperatives or establishing a regional energy agency, were new and unfamiliar to local community members and municipal government officials. These ideas clashed with the prevailing understanding of the development of the regional energy system, which had to this point been dictated by the oil shale industry and the national government. This demonstrates that what was perceived as single-loop learning by the environmental organizations and the renewable energy companies might have been experienced as double or triple-loop learning in the extended network of local communities and governments, as they did experience disruption of their perceptions of overarching discourses or institutional arrangements concerning energy policy. At the same time, the decision to focus on single-loop learning allowed the development of sufficiently realistic policy proposals that might have higher social acceptability among the local communities and governments than more radical propositions.

5.2.3 | Resource mobilization

One of the main purposes of the co-design experiment was to aggregate human, cultural, and moral resources to build a network of people who possess valuable knowledge, skills, and experience with renewable energy and/or who share the values and beliefs that would lend legitimacy and support to the energy transition in the region. Substantial effort was put into mobilizing social-organizational resources for this purpose by co-opting previous network ties between the participants (see Section 4.1.1) and recruiting affiliates from existing local organizations such as municipal governments and environmental NGOs in Ida-Virumaa. However, the lack of local renewable energy experts proved to be an issue, and thus several

participants had to be recruited from outside the region. On one hand, this enabled the facilitators to combine the knowledge of the best national renewable energy experts with the know-how of local communities and governments on local values and needs. On the other hand, the lack of local participants in the policy design process limited the mobilization of moral resources (i.e., local legitimacy and support) and might impede further policy implementation. The problem was, however, addressed by some of the policy proposals that focused on the development of local human resources, for instance, by offering retraining programs for former middle managers and technical laborers in the oil shale sector or establishing a renewable energy and green transition competence center and a regional energy agency to attract new talent to the region.

Material resources were mobilized through patronage: the policy co-design process was financed by a grant from the European Climate Initiative (EUKI),[6] which enabled the commissioning of the services of professional facilitators. However, as renewable energy policy is a new area of development for most of the municipalities in Ida-Virumaa, the further implementation of the proposals will depend on the mobilization of additional finances from different sources. For instance, the municipalities may be supported by the three pillars of the just transition mechanism: the just transition fund, the InvestEU "Just Transition" scheme, and the new public sector loan facility (European Commission, 2019). The decisions regarding the use of these funds will also depend on the parallel Ida-Viru action plan coordinated by the national government. Additional financial support can be applied for from numerous other European funds like LIFE, Interreg, and Horizon. At the same time, the private sector in Ida-Virumaa has a much larger capacity for investment in comparison to the municipalities. Therefore, several of the policy proposals focused on removing the barriers to private investment in renewable energy projects by, for instance, introducing state-guaranteed financial instruments for small and medium-sized enterprises and local governments or improving access to capital for households and communities. Hence, the co-design process represented a first step in promoting the combination and coordination of private and public sector investments into the energy transition.

5.2.4 | Developmental evaluation

Policy choices are usually evaluated both before and after implementation. In this case, the preimplementation evaluation was conducted as a collaborative effort between the participants and led by IBS. The role of the latter was not that of an external evaluator; on the contrary, the experts from IBS were equal partners and attended every meeting from the start to determine the best way to evaluate the developed policy proposals. It quickly became clear that a thorough evaluation of the policy proposals would not be possible due to the large number of proposals and the limited time frame of the process. On the other hand, it was also realized that a thorough evaluation was perhaps also not what was needed in this phase. Based on these insights, IBS created a detailed evaluation worksheet combining three different analytical frameworks (see Section 4.2.2). The primary aim of the worksheet was not to form a basis for a detailed evaluation but to mobilize participants' knowledge and to spark discussion and learning in the group. The participants were first asked to complete the worksheet individually as homework, after which the completed worksheets were discussed one by one among the participants in the second policy design workshop. The experts of IBS guided the discussion with questions like "what exactly is being developed?", "how has what is being developed emerged and how is it to be judged?", "what is the evidence of effectiveness for what is being developed?", and "in what settings has it already been implemented and tested?". Although a rough summative evaluation of the policy proposals was then delivered by IBS (see Appendix D), this can only give a first indication of the potential of the proposals and will need to be followed by a more detailed cost–benefit analysis and environmental impact assessment. However, the evaluation process presented a valuable opportunity for the participants to learn from each other in order to further develop and refine the proposals.

5.3 | Outcomes

5.3.1 | New knowledge, policies and networks

During the interviews, we asked the participants for their overall assessments of the policy proposals that had been developed. Most of the participants agreed that they constituted a good mix of well-known and novel solutions. Among the new ideas were cross-cutting proposals such as establishing a regional energy agency and promoting wind energy as a new narrative for Ida-Virumaa. This illustrates how professionally facilitated social learning between different actors can bring forth new policy ideas that would otherwise fall between the cracks of highly specialized expert domains. Moreover, there were signs of strong coherence and synergy between the proposals, which points to a potentially effective policy mix (Howlett, 2018; Howlett & Rayner, 2013). For instance, the promotion of local wind energy benefit schemes would make no difference if "phantom" grid connections were not removed because new wind turbines could not be connected to the grid. However, the implementation of both the proposal to create benefit schemes and the proposal to remove such phantom connections would eventually help increase wind energy capacity in the region. The same applies to the cross-cutting proposals. For example, establishing a regional energy agency would increase the availability of consultation services and financial instruments for both wind and solar energy as well as energy efficiency and storage projects.

On the other hand, some participants felt that the developed solutions remained somewhat general and vague, lacking immediate applicability in the region. The reason might be the lack of local experts in the co-design process (see Section 5.2.3) or the fact that the process focused more on long-term vision-building, learning, and consensus-building than on developing a precise action plan. As a consequence, the resulting policy proposals were not carefully calibrated tools but more general instruments or implementation styles

(Howlett, 2014, 2018; Howlett & Rayner, 2013). There was a clear difference between the proposals developed through this approach and the more detailed policy instruments developed for the business plan (plan B) and the carbon plan (plan C), which were designed less collaboratively and relied more on a managerial approach (IVIA, 2020a, 2020b). Hence, there is a trade-off in the design phase between the managerial perspective on one hand, which enables specific on-the-ground policy instruments to be quickly carved out, and the collaborative approach on the other hand, which seems to generate more ambitious and consensual yet also more abstract proposals.

Another outcome of policy co-design can be the emergence of new policy networks through the aggregation or co-optation of existing ties (see Section 5.2.3). The participants who were not already familiar with each other noted that they got a good overview of all the "players" in the field by participating in the process together, and that they now knew whom to turn to for help with specific issues. Opinions differed on the need to institutionalize the established network. Some participants expressed hope that the network would be willing to gather again in the future on an ad hoc basis, while others favored a more structured approach. For instance, one of the participants suggested the establishment of a public-private partnership based on an institutional agreement between the renewable energy companies, municipalities, and nongovernmental organizations. The question remained unresolved as the facilitators were forced to prioritize the delivery of the policy proposals over network building due to time limitations.

5.3.2 | Social acceptability

The establishment of a strong and inclusive policy network can increase the acceptability and legitimacy of the developed policies across the macro-economic, meso-political, and micro-social levels, but does not necessarily do so. At the macro-economic level, a sense of competition naturally arises between actors tied to either the incumbent or the emerging industries. For instance, the issue of whether Ida-Virumaa needs a new renewable energy and green transition competence center or whether it should be established as a branch of the existing oil shale competence center under TalTech University sparked debate in the extended network and in the media. Regarding meso-political acceptability, local government officials expressed notable concerns about the co-design process (see Section 5.1). This points to a relatively low "goodness of fit" between collaborative governance and the prevalent managerial governance mode actually practiced in the municipalities. On the other hand, there was high acceptability of the co-design experiment and its outcomes among the actors who took part in the process. Even the ones who were skeptical at first later evaluated the process as a very positive experience and appreciated the chance to enter into a constructive dialog. In this regard, the institutionalization of the network might help increase the legitimacy of collaboration in the eyes of various interested parties, including government officials.

6 | CONCLUSION

In this article, we assessed a recent energy transition policy co-design experiment in Ida-Virumaa, Estonia, by building on a framework proposed by Sillak et al. (2021). The goals of the co-design experiment were (1) to establish a network of people interested in renewable energy and energy efficiency in the region; (2) to develop and validate proposals for policies that could accelerate the energy transition; and (3) to summarize lessons and suggestions for similar processes in the future. We conclude here by discussing the latter.

First, the recruitment of participants is likely to face significant challenges due to the mismatch between the traditional role division between national and municipal governments, industries, and NGOs and the roles that they are asked to fill in a collaborative process.

Second, while previous literature suggests that policy implementation can be enhanced by collaboration in the design phase (Ansell et al., 2017; Sørensen & Torfing, 2021), we find that the fluidity of roles that collaboration generates can also create confusion around implementation. We suggest that if a clear role division does not emerge in the collaborative process, an agreement on roles should be facilitated. In this case, the time for network building and role allocation was cut to a minimum to accommodate the participants' other expectations and the questions over role division thus remained unsolved.

Third, the honest articulation and careful alignment of expectations can help recruit hesitant participants and improve social acceptability, but can also significantly change the process and its outcomes. In this case, the facilitators focused on fulfilling the participant expectations deemed most necessary, that is, delivering the policy proposals in a time-efficient manner. However, this came at the expense of the time that was initially planned for delving into the root causes of problems, fostering deep (double or triple-loop) learning, and building a strong network with clear roles and tasks. In any case, collaboration is likely to increase the time needed for policy development in the early phases, but this time can potentially be saved later on.

Fourth, the mobilization of local knowledge and resources is a key advantage of co-creation, but it can also turn out to be a considerable challenge if there is little know-how or experience with renewable energy in the region. However, this issue can be resolved by mobilizing outside experts. In fact, we find that when a balance is found between involving outside experts and local enthusiasts, co-design can improve both innovation and acceptability.

Fifth, innovation is further supported by professionally facilitated social learning. For instance, in this case, new cross-cutting proposals emerged, such as establishing a regional energy agency or promoting wind energy as a new narrative for Ida-Virumaa. We suggest spending as much time as possible on developing potentially cross-cutting and mutually reinforcing policy proposals by encouraging social learning and mobilizing the resources available within the network.

Sixth, social learning can lead to a shared understanding that spills over into the extended network or even becomes institutionalized in governance structures. Whereas triple-loop learning is often heralded

as necessary for systemic change, it might be more effective to begin with surface (single-loop) learning as this has a higher chance of spill-over. This is because what is considered to be single-loop learning by experts and enthusiasts might be experienced as double or triple-loop learning in the extended network, already significantly disrupting common sense perceptions of overarching discourses or institutional arrangements concerning energy policy.

Seventh, collaborative policy design increases the risk that some policy proposals remain rather vague and underdeveloped, resulting not in carefully calibrated tools but in more general instruments or implementation styles that have to be supplemented with specific on-the-ground calibrations. However, the added value of the collaborative approach lies in improving policy innovation, increasing the acceptability of new policies, and developing an implementation network. Hence, the process and its outcomes need to be evaluated in a different manner. We suggest the involvement of a developmental evaluator who becomes part of the design team from the start, facilitates discussion about how to evaluate whatever happens, and intervenes with evaluative questions and data to support continuous learning and innovation.

Eighth, creating alternative venues of policymaking might undermine the effectiveness of the collaborative approach. In this case, alternative venues for actors were created by dividing the Ida-Virumaa development strategy into the green plan (plan G), business plan (plan B), carbon plan (plan C), and education plan (plan E). As these plans were designed by different actors via different approaches, it remained unclear throughout the process to what extent the developing plans were compatible with one another. This might become a problem in the future because coordination and synergy through the optimization of the requirements of different sectors are vital for moving toward 100% renewable energy systems (Lund et al., 2017; Mathiesen et al., 2015).

Finally, we conclude that co-design can supplement and slowly transform the conventional governance process even in a setting that does not enjoy a well-developed collaborative culture. However, while it is relatively easy to co-design energy policy or a strategic energy plan, it is much more challenging to co-create a strong network of committed actors with clear roles in the implementation of policies and plans.

Future research could focus on policy co-design in sectors and systems other than energy, such as transport, manufacturing, forestry, and agriculture, all of which will need to contribute in order for climate neutrality to be reached by 2050. In addition, research is needed on how collaboration can not only improve policies and plans but also build long-lasting networks, how these networks could be institutionalized as new governance bodies, and what influence that could have on policy implementation.

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CONFLICT OF INTEREST

The authors declare a conflict of interest due to participating in the policy co-design experiment as staff of the Estonian Green Movement.

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ENDNOTES

[1] A distinction is sometimes made between co-creation and co-design as different processes, but a closer look at the literature reveals that these two "waves" of thinking are very much linked (Dudau et al., 2019) and that co-design is an essential part of co-creation. In this article, we mainly use the term "co-design" instead of co-creation because the empirical case study focuses on the co-design phase.

[2] Hereon referred to as "partners."

[3] Hereon referred to as "facilitators."

[4] From this point on, all dates listed in reference to the co-design process refer to the year 2020.

[5] The categories were direct and indirect jobs created, average salary, new businesses created, business investments, R&D investments, export revenue, tax revenue, energy consumption, greenhouse gas emissions, renewable energy production, energy storage capacity, net migration rate, social security. The participants were allowed to add additional categories.

[6] More information on the EUKI project "Tackling climate change and Estonian energy policy: Facilitating a meaningful dialog about future" can be found here: https://www.euki.de/en/euki-projects/tackling-climate-change-and-estonian-energy-policy-facilitating-a-meaningful-dialogue-about-future/.

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