

Dawid Zieliński, Bartosz Labuhn

Policy Lab as a Tool for Public Policy Design in the Energy Transition of Coal Regions:

Towards a Unified ETPL Model

**SERIES: GREEN TRANSFORMATION
POLICY IN POLAND**



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Dawid Zielinski
Bartosz Labuhn

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GLOSSARY

Table 1 summarizes the key terms used throughout the monograph and indicates where each is discussed.

Table 1. Glossary of Key Terms

Term	Brief Explanation	Location in the text
<i>Policy Lab</i>	A multi-stakeholder, structured space for experimenting with public policy design, combining expert knowledge, data, and public participation in an iterative learning cycle	Subsection 1.1
<i>Living Lab</i>	A related form of experimentation, more deeply rooted in a specific territory and focused on testing solutions in the user's natural environment, treated in this monograph as complementary to the Policy Lab	Subsection 1.2
<i>Experimental Governance</i>	A theoretical framework describing the iterative testing of policies as a response to uncertainty, along with mechanisms linking experimentation to lasting change	Subsection 1.3.2
<i>Multilevel Perspective (MLP)</i>	A theoretical framework explaining systemic transformation as an interaction among niches, regimes, and the landscape	Subsection 1.3.1
<i>Boundary-spanning</i>	A mechanism for linking agendas, arenas, and actors, which determines whether an experiment translates into lasting policy change (agenda-, arena-, and actor-linking)	Subsections 1.3.2 and 5.2
<i>Partial embedding</i>	The laboratory's intermediate position between full autonomy and full absorption by the host bureaucracy	Subsection 1.3.2
<i>Pilotism</i>	A phenomenon in which experiments remain local and temporary due to a lack of institutional anchoring	Subsection 1.4

<i>Energy Transition Policy Lab (ETPL)</i>	An original, unified Policy Lab model dedicated to the energy transition of coal and lignite regions, proposed in the monograph	Chapter 5
<i>IARI Cycle</i>	The four-stage process architecture of the ETPL model: identification, analysis, recommendation, implementation	Subsection 5.2
<i>Dedicated roles vs. accumulation of roles</i>	The ETPL model's governance principle, according to which specific functions (facilitator, policy designer, lab manager, knowledge broker) should be assigned to separate actors and not combined	Subsection 5.3
<i>Policy Linkage</i>	A mandatory, pre-designed mechanism for translating Policy Lab outcomes into public policy decisions	Subsections 4.4 and 5.1
<i>Just Transition Fund (JTF)</i>	An EU financial instrument designed to support coal-mining regions in the transition process	Subsection 2.1.3
<i>Territorial Just Transition Plan (TJTP)</i>	Document determining the region's access to JTF funds	Subsection 2.1.3

PREFACE

It is widely recognised that Poland's green transformation policy is centred on the shift away from fossil fuels, particularly coal, towards renewable energy sources (RES), with the overarching objective of achieving climate neutrality by 2050. This transition is being pursued through the Energy Policy of Poland until 2040 (PEP2040), the National Recovery and Resilience Plan (NRRP) and European Union regulatory frameworks, including the European Green Deal. These measures encompass the development of renewable energy sources, the modernisation of the energy sector, including the development of nuclear power, improvements in the energy efficiency of buildings, the promotion of low-emission transport and support for innovation. Their implementation requires substantial investment, financed, inter alia, through European Union (EU) funding. Research indicates growing optimism among the Polish public

regarding the potential economic and social benefits of the transition. Nevertheless, the process requires significant levels of investment and entails considerable challenges, particularly for coal-mining regions. It also poses important theoretical, descriptive and practical challenges for the academic community.

The present series of publications, devoted to green transformation policy in Poland, provides an in-depth examination of the issues associated with this field of research. Spanning six volumes, the series enables a multifaceted exploration of the subject matter, integrating theoretical perspectives with practical considerations.

The publication series adopts an interdisciplinary approach, with the aforementioned subject matter providing a common thematic framework for the individual monographs. The authors address issues relating to public policy, management, environmental protection, law and public administration. By bringing these studies together within a single series, the research provides a comprehensive and multidimensional perspective on the issues under consideration.

In the fifth volume of this series the authors advanced the original Energy Transition Policy Lab (ETPL) model, which integrates a four-stage operational cycle (Identification, Analysis, Recommendation, Implementation), mandatory multi-stakeholder participation, and a formal

boundary-spanning mechanism linking experimental insights to political decision-making. Throughout the analysis, the findings confirm that the efficacy of Policy Lab instruments depends not merely on the scale of financial resources, but crucially—and perhaps predominantly—on functional role architecture, dedicated external facilitation, and institutionalised mechanisms translating participatory deliberation into binding public policy recommendations.

INTRODUCTION

Context and Research Problem

In coal-mining regions, the pace of asset closure may outstrip the capacity of regional institutions to update development strategies, creating a potential mismatch between socio-economic change and institutional adaptation¹. The energy transition of Central Europe's coal and lignite regions requires both strategic top-down planning

¹ S. Radosevic, T. Zoretic, *EU smart specialization policy between experimentation and accountability: dynamic policy cycle perspective*, "European Planning Studies" 2024, vol. 32, no. 8, pp. 1693–1712, <https://doi.org/10.1080/09654313.2024.2359669>; E. Sievers, J.W. Erisman, M. Spierenburg, A.P.E. van Oudenhoven, *Planting seeds or cultivating change? Digging into Living Labs' contributions to transformative change*, "Global Environmental Change" 2026, vol. 97, article 103133, <https://doi.org/10.1016/j.gloenvcha.2026.103133>

and robust bottom-up legitimacy. Strategic documents, such as the European Union's Just Transition mechanisms, national recovery plans, or the energy policies of Member States, set out goals, timelines, and financial resources; however, they do not, on their own, determine how local communities, local governments, businesses, and research institutions should collaborate to translate these objectives into sustainable economic and social change within a specific territory. Over the past decade, this gap has been addressed by tools for experimental public policy management, amongst which Policy Labs, Living Labs, and Innovation Labs occupy a prominent place as spaces for co-creation, testing, and iterative learning under conditions of uncertainty².

The literature on the subject describes the Policy Lab primarily as a general-purpose instrument. Today, the concept encompasses initiatives ranging from workshops assisting young migrants in articulating their needs across Italian municipalities to laboratories developing women's health strategies within the British healthcare system³. Such

² M. McGann, E. Blomkamp, J.M. Lewis, *The rise of public sector innovation labs: experiments in design thinking for policy*, "Policy Sciences" 2018, vol. 51, no. 3, pp. 249–267, <https://doi.org/10.1007/s11077-018-9315-7>

³ C. Baraldi, A. Capalbi, *Facilitation of young migrants' agency in policy lab meeting interactions: a case analysis in an Italian city*, "Journal of Applied Communication Research" 2025, vol. 53, no. 5, pp. 439–

contexts remain far removed from the energy transition of coal-mining regions—the subject of this monograph—where the lab approach has been utilised far less frequently as a dedicated sector-specific tool. This versatility constitutes both the strength of the concept, as it facilitates transferability across domains, and its principal vulnerability: the literature cautions that deploying a tool without a dedicated sectoral framework risks creating a misalignment between policy design and the underlying problem⁴. Consequently, there remains a distinct lack of a unified, operational Policy Lab model that integrates the theoretical framework of experimental governance with sector-specific characteristics, including the rigid expenditure timelines of just transition funds, the operational dynamics of mine and power plant decommissioning, and the socio-economic tensions typical of industrial monocultures.

457, <https://doi.org/10.1080/00909882.2025.2525129>; M. Nana, T. Haggar, H. Boulding, et al., *Advancing the women's health strategy: a policy lab aimed at improving effective management of hyperemesis gravidarum*, "Health Research Policy and Systems" 2025, vol. 23, no. 1, article 123, <https://doi.org/10.1186/s12961-025-01384-y>

⁴ A. Wellstead, S. Giest, I. Mukherjee, et al., *Peak policy lab or chasing windmills? The overlooked issue of misaligned policy design*, "Policy Sciences" 2025, vol. 58, no. 2, pp. 267–286, <https://doi.org/10.1007/s11077-025-09577-6>; A.M. Wellstead, A. Gofen, A. Carter, *Policy innovation lab scholarship: past, present, and the future – Introduction to the special issue on policy innovation labs*, "Policy Design and Practice" 2021, vol. 4, no. 2, pp. 193–211, <https://doi.org/10.1080/25741292.2021.1940700>

The starting point of this monograph is a systematic review of the academic literature, covering a broad and diverse corpus of works on Policy Labs, juxtaposed with the policy framework of Poland's energy transition (Chapter 2) and empirical material from several well-documented European coal and lignite regions with diverse institutional characteristics (Chapter 3). The study concludes with an original case study of the Policy Lab implemented in Eastern Wielkopolska (Chapter 4) and an overarching synthesis: the Energy Transition Policy Lab (ETPL) model, proposed in Chapter 5.

Purpose of the Monograph and Research Questions

The objective of this monograph is to develop and preliminarily validate a unified Policy Lab model dedicated to the energy transition process across the coal and lignite regions of Central Europe. To this end, the study synthesises the theoretical framework of experimental governance, documented experiences from comparable European reference regions, and lessons learned from the authors' own implementation practice in Poland. This combination of theoretical, comparative, and empirical perspectives is deliberate; the evaluation literature indicates that conceptual analysis and practice-based evidence

jointly provide a robust foundation for assessing such governance instruments⁵.

This objective is pursued by addressing three central research questions:

RQ1: How can the theoretical framework of the Policy Lab, encompassing multi-level governance, institutional experimentalism, and boundary-spanning mechanisms, be adapted to the sector-specific nature of regional energy transition? (Chapter 1)

RQ2: What mechanisms of governance, stakeholder participation, and financing distinguish relatively effective Policy Lab initiatives from less effective ones in documented cases from European coal-mining regions, and what conclusions can be drawn from this comparison for the Polish institutional context? (Chapters 2 and 3)

RQ3: Can theoretical and comparative insights be synthesised into an operational, transferable model that can be applied, tested, and scaled using a Polish coal region as an empirical case? (Chapters 4 and 5)

The central thesis of this monograph is formulated as follows: The Policy Lab, which has thus far been applied

⁵ K. Olejniczak, S. Borkowska-Waszak, A. Domaradzka-Widła, Y. Park, *Policy labs: the next frontier of policy design and evaluation?*, "Policy & Politics" 2020, vol. 48, no. 1, pp. 89–110, <https://doi.org/10.1332/030557319x15579230420108>

in a fragmented manner and without a dedicated sectoral framework, can be transformed into a unified model—proposed in this work as the Energy Transition Policy Lab (ETPL)—integrating an iterative operational cycle (identification, analysis, recommendation, and implementation), mandatory multi-stakeholder involvement, and a formal, pre-designed boundary-spanning mechanism. A model articulated in this manner enhances the likelihood of sustainably translating local policy experiments into binding regional decisions to a significantly greater extent than practices reliant solely on ad hoc, project-based funding and informal participation.

Methodological Approach

This monograph combines three complementary research strategies. The first is a structured literature review covering Policy Lab theory, the experiences of post-industrial and coal-dependent regions, funding mechanisms, institutional competences and roles, change theory, and participatory tools. The second is a case study analysis, conducted both comparatively (Chapter 3, examining several documented European initiatives) and in depth (Chapter 4, drawing on the authors' own implementation experience in Konin and neighbouring counties). The third is a design science

approach through which the ETPL model is constructed as a practically useful artefact. This methodological choice reflects the authors' response to the research problem, aligning with the evaluation literature which emphasises that tools for public sector experimentation should be assessed in terms of both theoretical coherence and practical utility⁶. Preliminary validation consisted of reviewing the model's alignment with the relevant literature and EU policy documents; a complementary Delphi consultation was designed but has not yet been conducted (for details, see Subsection 5.6).

A limitation of the adopted methodology is the lack of a comprehensive, multi-regional field study of the ETPL model across its entire operational cycle. The model has been verified theoretically, comparatively, and partially empirically, to the extent corresponding to the portion of the planned operational cycle that has been implemented in practice by the authors to date; however, it has not been tested over a full operational cycle in more than one region.

⁶ E. Ferrarezi, I. Brandalise, J. Lemos, *Evaluating experimentation in the public sector: learning from a Brazilian innovation lab*, "Policy Design and Practice" 2021, vol. 4, no. 2, pp. 292–308, <https://doi.org/10.1080/25741292.2021.1930686>

Original Contribution and Limitations

The original contribution of this monograph is twofold. First, it systematises the fragmented literature on Policy Labs in the context of coal and lignite regions into a coherent theoretical and comparative framework. To the authors' knowledge and within the literature reviewed here, this particular configuration has not previously been presented in a single study, as scholarship in this field has frequently highlighted the fragmentation of existing typologies and descriptive categories of Policy Labs⁷. Second, the monograph proposes an operational ETPL model tailored to the sector-specific conditions of the energy transition and examined against the authors' implementation experience in Eastern Wielkopolska, thereby distinguishing this work from purely theoretical or descriptive studies.

The limitations of this study stem directly from the adopted methodology and have already been partially noted. The model has so far been empirically verified in a single

⁷ E. Hoss-Golan, A. Gofen, A.M. Wellstead, *The role of institutional logic: a new dynamic typology for policy innovation labs*, "Policy Design and Practice" 2026, vol. 9, no. 2, pp. 135–146, <https://doi.org/10.1080/25741292.2026.2634464>; G. McCrory, J. Holmén, N. Schäpke, J. Holmberg, *Sustainability-oriented labs in transitions: An empirically grounded typology*, "Environmental Innovation and Societal Transitions" 2022, vol. 43, pp. 99–117, <https://doi.org/10.1016/j.eist.2022.03.004>

region and across a limited portion of the operational cycle. Furthermore, the comparative material examined in Chapter 3 draws on the best-documented cases in the available literature rather than a fully representative sample of all European initiatives of this type. This limitation is, however, characteristic of the wider field of Policy Lab research, where representative and standardised case samples remain rare⁸. These limitations, along with directions for future research, are elaborated in the Conclusion.

⁸ A. Wellstead, A. Gofen, A. Carter, *op. cit.*

CHAPTER I

THE POLICY LAB AS A TOOL FOR PUBLIC POLICY DESIGN

1.1. Origins and Definitions of the Policy Lab

The concept of the Policy Lab emerged as a direct response to a structural challenge within public administration: the traditional, linear model of policymaking—premised on a sequential progression from diagnosis to legislative drafting and implementation—proved overly rigid when confronted with complex, rapidly evolving societal problems. Before systematic theoretical reflection on this phenomenon developed, practice was shaped by pioneering institutions, most notably the Danish MindLab, followed by the British Behavioural Insights Team (BIT) and the Policy Lab within the UK Civil Service⁹. Through iterative

⁹ Ibid.

trial and error, these early initiatives established many of the tools and methodologies documented in contemporary academic literature¹⁰.

Following this practical trajectory, scholarship predominantly defines a Policy Lab as a multidisciplinary team or institutional arrangement that employs service design methodologies—principally design thinking, controlled experimentation, and stakeholder engagement—to formulate public policies¹¹. Conceived in this manner, these laboratories typically operate outside conventional bureaucratic silos, exercise varying degrees of operational autonomy, and act as an institutional bridge—termed in the literature as ‘boundary-spanning’—connecting the domains of politics, science, and practice¹².

Within this overarching definition, scholars place varying emphases: some prioritise evidence-based evaluation and quantitative data analysis, others focus on collaborative co-design with end-users, whilst others underline

¹⁰ Ibid.

¹¹ M. McGann, E. Blomkamp, J.M. Lewis, op. cit.; K. Olejniczak, S. Borkowska-Waszak, A. Domaradzka-Widła, Y. Park, *Policy labs: the next frontier of policy design and evaluation?*, “Policy & Politics” 2020, vol. 48, no. 1, pp. 89–110, <https://doi.org/10.1332/030557319x15579230420108>

¹² U. Zeigermann, S. Ettelt, *Spanning the boundaries between policy, politics and science to solve wicked problems: policy pilots, deliberation fora and policy labs*, “Sustainability Science” 2023, vol. 18, no. 2, pp. 809–821, <https://doi.org/10.1007/s11625-022-01187-y>

ethnographic research. The latter entails direct observation and qualitative interviews with individuals directly affected by a given policy to capture lived, rather than merely self-reported, experiences. Such an approach proves particularly valuable when decision-makers lack first-hand insight into the realities of communities facing transition, as is typical across regions undergoing deep industrial restructuring¹³. In response to these divergent perspectives, scholars have sought a common denominator across the field. Accordingly, this monograph adopts a working definition of a Policy Lab¹⁴ as a structured, multi-stakeholder space for experimenting with public policy design, operating under real-world or near-real conditions, and integrating expert knowledge, empirical data, and public participation within an iterative learning cycle.

Definitions and operational models vary considerably across jurisdictions, reflecting the extent to which laboratory structures depend on their respective administrative traditions and political contexts. The British BIT focuses

¹³ C. Lee, L. Ma, *The Role of Policy Labs in Policy Experiment and Knowledge Transfer: A Comparison across the UK, Denmark, and Singapore*, “Journal of Comparative Policy Analysis: Research and Practice” 2020, vol. 22, no. 4, pp. 281–297, <https://doi.org/10.1080/13876988.2019.1668657>

¹⁴ M. Maor, *Towards a minimal definition of policy innovation labs*, “Policy Sciences” 2026, vol. 59, no. 1, pp. 225–244, <https://doi.org/10.1007/s11077-026-09605-z>

on empirical evidence and its deployment to persuade policymakers—a practice conceptualised as evidence-based advocacy—operating through a government-initiated model anchored in randomised controlled trials¹⁵. In contrast, the Danish MindLab emphasised collaborative co-creation with public agencies¹⁶. Singapore’s THE Lab prioritises ethnographic insight and design thinking within an independent or hybrid institutional format¹⁷, whilst Canadian labs operate across federal, provincial, and municipal tiers of government, mirroring the country’s multi-level governance framework¹⁸. This geographic variation—heavily skewed towards Anglo-Saxon and Scandinavian models, with limited scholarly attention paid to Central and Eastern Europe¹⁹—forms a key rationale for the research gap identified in Subsection 1.4.

¹⁵ A. Whicher, op. cit.

¹⁶ Ibid.

¹⁷ C. Lee, L. Ma, op. cit.

¹⁸ B. Evans, S.M. Cheng, *Canadian government policy innovation labs: An experimental turn in policy work?*, “Canadian Public Administration” 2021, vol. 64, no. 4, pp. 587–610, <https://doi.org/10.1111/capa.12438>; E. Romero-Frías, D. Torres-Salinas, W. Arroyo-Machado, *Who influences policy labs in the European Union? A social network approach*, “Quantitative Science Studies” 2023, vol. 4, no. 2, pp. 423–441, https://doi.org/10.1162/qss_a_00247

¹⁹ E. Romero-Frías, W. Arroyo-Machado, *Policy labs in Europe: political innovation, structure and content analysis on Twitter*, “El Profesional de la Información” 2018, vol. 27, no. 6, article 1181, <https://doi.org/10.3145/epi.2018.nov.02>

To systematise this body of work, the literature categorises Policy Labs according to their governance and ownership structures—distinguishing between government-controlled, government-supported, publicly operated, and fully independent entities—as well as by organisational form, scale, thematic focus, and methodological toolkit²⁰. The effectiveness of such labs is typically appraised by their capacity to enhance policy design; however, empirical findings remain inconclusive. Whilst Policy Labs can strengthen administrative innovation capacity, their long-term impact is frequently constrained by institutional isolation, project-based lifecycles, and vulnerability to shifting political patronage²¹.

1.2. Policy Lab vs Living Lab: Similarities and Differences

The concepts of ‘Policy Lab’ and ‘Living Lab’ frequently overlap in practice and lack universal standardisation. For

²⁰ K. Olejniczak, S. Borkowska-Waszak, A. Domaradzka-Widła, Y. Park, op. cit.

²¹ A. Wellstead, S. Giest, I. Mukherjee, et al., *Peak policy lab or chasing windmills? The overlooked issue of misaligned policy design*, “Policy Sciences” 2025, vol. 58, no. 2, pp. 267–286, <https://doi.org/10.1007/s11077-025-09577-6>; J.M. Lewis, *The limits of policy labs: characteristics, opportunities and constraints*, “Policy Design and Practice” 2021, vol. 4, no. 2, pp. 242–251, <https://doi.org/10.1080/25741292.2020.1859077>

the analytical purposes of this monograph, a clear distinction is maintained. A Policy Lab focuses primarily on public policy design: the process is typically commissioned or convened by a public authority, and its primary objective is the formulation of policy recommendations, regulatory adjustments, or concrete public policy instruments. Conversely, a Living Lab is more deeply anchored in a specific territorial setting, adopts a grassroots, multi-stakeholder orientation, and tests experimental solutions directly within users' real-world environments. Its scope routinely extends beyond public governance to encompass technological, social, and commercial service innovations²². Table 2 summarises the primary analytical distinctions between Policy Labs and Living Labs.

Table 2. Policy Labs and Living Labs: Key Differences

Dimension	Policy Lab	Living Lab
Primary Orientation	Public policy design and regulatory innovation	Testing solutions in a real-world environment
Lead Actor	Predominantly public sector-led	Bottom-up multi-stakeholder coalition
Territorial Embeddedness	Variable, frequently supra-local or national	Deeply rooted, territory-specific

²² L. Fuglsang, A.V. Hansen, I. Mergel, M.T. Røhnebæk, *Living Labs for Public Sector Innovation: An Integrative Literature Review*, "Administrative Sciences" 2021, vol. 11, no. 2, p. 58, <https://doi.org/10.3390/admsci11020058>

Dimension	Policy Lab	Living Lab
Outcome Horizon	Normative and regulatory (policy recommendations, instruments)	Technological and social (prototype, service)
Typical Methods	Evidence-based evaluation, co-design, deliberative workshops	Ethnographic research in users' natural environments, field pilots, prototyping

Source: Authors' own elaboration.

Nevertheless, both formats share a fundamental commitment to innovation, experimentation, and multi-stakeholder engagement, meaning the boundary between them remains porous in practice. Indeed, a Living Lab is frequently deployed as an alternative organisational framework for co-creative experimentation within policy design²³. Within the scope of this monograph, the two approaches are treated as complementary rather than mutually exclusive in the context of energy transition. Whereas a Policy Lab provides the structured mechanism for translating knowledge and deliberation into formal policy recommendations, a Living Lab offers direct territorial embeddedness, enabling experimental interventions to be tested under a region's authentic socio-technical conditions. Chapter 3 subsequently examines how various European initiatives synthesise elements of both approaches.

²³ Ibid.

1.3. Theoretical Framework: Experimental Governance and Policy Design

Understanding the function of the Policy Lab in regional energy transitions requires drawing upon several complementary theoretical frameworks, none of which provides an exhaustive explanation in isolation. The three theoretical lenses most pertinent to the core argument of this monograph are elaborated below, culminating in the integrative synthesis presented in Subsection 1.3.4. Rather than constituting an independent fourth framework, this synthesis integrates these distinct perspectives into a coherent analytical whole.

1.3.1. Multi-Level Perspective

The Multi-Level Perspective (MLP), rooted in socio-technical transitions theory, conceptualises systemic transformation as the outcome of dynamic interactions across three analytical levels:

- **Niches:** Protected spaces wherein radical innovations can emerge, develop, and undergo testing;
- **Regimes:** Established, semi-coherent configurations of rules, practices, and institutions that stabilise the incumbent socio-technical system;

- **Landscape:** The broader, exogenous socio-technical environment encompassing cultural paradigms, macroeconomic trends, and macro-political or environmental pressures.

Transformation occurs when niche-level innovations mature, interact with or disrupt regime structures, and exploit windows of opportunity opened by landscape pressures. Within this analytical framework, the Policy Lab functions primarily as an institutional niche arena, facilitating social learning, stakeholder alignment, and structured policy experimentation under conditions of deep uncertainty.

Empirical scholarship illustrates the operation of this mechanism. In the development of Finland's Mobility-as-a-Service (MaaS) framework, targeted administrative restructuring facilitated deliberate policy experimentation, which in turn enabled shared vision-building, multi-actor networking, and eventual regulatory adaptation²⁴. Conversely, the withdrawal of solar policy initiatives across municipal cases in China demonstrates that experimental programmes fail to yield lasting institutional change when detached from local socio-political realities and

²⁴ P. Kivimaa, K.S. Rogge, *Interplay of policy experimentation and institutional change in sustainability transitions: The case of mobility as a service in Finland*, "Research Policy" 2022, vol. 51, no. 1, article 104412, <https://doi.org/10.1016/j.respol.2021.104412>

public legitimacy²⁵. This indicates that experimentation in isolation—lacking formal linkages to institutional architectures—remains insufficient. A complementary insight emerges from the gradual institutionalisation of distributed solar energy in China, where enduring change was achieved through continuous, structured negotiations among diverse stakeholders operating within existing institutional constraints²⁶. For the ETPL model, therefore, the core analytical question is not whether to experiment, but how to sequence experimental policy design with durable institutional change—a problem directly addressed in Chapter 5.

1.3.2. Experimental Governance and Boundary-Spanning Mechanisms

The second essential theoretical framework is experimental governance, which posits iterative testing as a primary

²⁵ P. Huang, *When government-led experimentation meets social resistance? A case study of solar policy retreat in Shenzhen, China*, “Energy Research & Social Science” 2021, vol. 75, article 102031, <https://doi.org/10.1016/j.erss.2021.102031>

²⁶ Z. Xie, D. van der Horst, M. Lane, *From pilot to reform: Institutional change through distributed solar experimentation in China*, “Energy Research & Social Science” 2026, vol. 131, article 104493, <https://doi.org/10.1016/j.erss.2025.104493>

instrument for managing policy uncertainty and highlights ‘boundary-spanning’ mechanisms—the structured linkage of agendas, arenas, and actors—as a necessary precondition for translating experimental findings into durable policy change²⁷. Scholarship identifies three complementary boundary-spanning mechanisms:

- **Agenda-linking:** Aligning the laboratory’s thematic focus and exploratory work with the strategic priorities and legislative mandates of the host administration;
- **Arena-linking:** Establishing or utilising institutionalised multi-stakeholder forums (such as task forces, roundtables, and deliberative panels) to sustain the engagement and commitment of decision-makers;
- **Actor-linking:** Deploying institutional brokers, policy entrepreneurs, and change champions capable of navigating bureaucratic complexity and fostering cross-sectoral coalitions.

Laboratories that lack explicit operational objectives or function in structural isolation risk degenerating into performative ‘innovation theatre’—symbolic experimentation that generates no substantive policy impact.

²⁷ A.H. Krogh, *Policy labs on the fringes: boundary-spanning strategies for enhancing innovation uptake*, “Policy Design and Practice” 2024, vol. 7, no. 1, pp. 17–32, <https://doi.org/10.1080/25741292.2023.2293338>; U. Zeigermann, S. Ettelt, op. cit.

Central to this framework is the structural tension between operational autonomy and bureaucratic integration. Deep integration into the host administration risks constraining a laboratory's creativity, critical stance, and experimental flexibility. Conversely, excessive detachment frequently results in institutional marginalisation, rendering laboratory outputs politically inconsequential. Consequently, the literature identifies 'partial embedding'—maintaining institutional and communicative links with administrative structures without full bureaucratic absorption—as an effective operational configuration rather than an absolute ideal. Recent scholarship further demonstrates that innovation intermediaries encounter persistent legitimacy challenges when mediating among divergent constituencies; structural positioning alone cannot resolve inherent tensions surrounding democratic accountability and authority²⁸.

²⁸ A.H. Krogh, op. cit.; S. Hinrichs-Krapels, J. Bailey, H. Boulding, et al., *Using Policy Labs as a process to bring evidence closer to public policymaking: a guide to one approach*, "Palgrave Communications" 2020, vol. 6, no. 1, article 101, <https://doi.org/10.1057/s41599-020-0453-0>; C. Gibert, Q. Plantec, *The living lab and the cursed catalyst: Navigating the legitimacy challenges of innovation intermediaries for sustainable innovation*, "Research Policy" 2026, vol. 55, no. 3, article 105403, <https://doi.org/10.1016/j.respol.2025.105403>

1.3.3. Competences and Roles in a Policy Lab

The third theoretical framework operates at the micro level, addressing the professional competences and functional roles that determine a laboratory's operational effectiveness. The literature delineates four complementary roles essential to the functioning of an experimental lab:

- **Facilitator:** Tasked with managing deliberative dialogue, group dynamics, and structural power asymmetries among heterogeneous participants;
- **Policy Designer:** Responsible for visualising complex data, prototyping public policy solutions, and orchestrating user-centred co-creation processes;
- **Lab Manager:** Serving as an institutional liaison to cultivate political support, secure administrative resources, and navigate internal governance procedures;
- **Knowledge Broker:** Dedicated to translating intricate scientific and technical evidence into accessible, actionable insights for decision-makers whilst sustaining interdisciplinary networks across academia, public administration, and civic practice²⁹.

²⁹ A. Whicher, P. Świątek, *Rise of the policy designer—lessons from the UK and Latvia*, “Policy Design and Practice” 2022, vol. 5, no. 4, pp. 466–482, <https://doi.org/10.1080/25741292.2022.2141488>; S. Hinrichs-Krapels et al., op. cit.; J.M. Lewis, op. cit.

To date, however, a formalised, universally recognised competence framework tailored specifically to Policy Labs in heavy-industry or decarbonisation contexts remains absent from the literature. Existing empirical insights are largely derived from unrelated domains, such as public health and digital service innovation³⁰—an analytical limitation that directly informs the research gap elaborated in Subsection 1.4.

1.3.4. Synthesis: Why No Single Theory Is Sufficient

None of the aforementioned theoretical frameworks, when applied in isolation, fully accounts for the functioning of a Policy Lab as an instrument of regional energy transition. While the Multi-Level Perspective effectively illuminates the macro-dynamics of systemic socio-technical change, it offers limited insight into the micro-level, day-to-day operational realities of managing an experimental

³⁰ R. Ned-Sykes, C. Johnson, J.C. Ridderhof et al., *Competency Guidelines for Public Health Laboratory Professionals: CDC and the Association of Public Health Laboratories*, “MMWR Surveillance Summaries” 2015; S.L. Connolly, J.L. Sullivan, M.J. Ritchie, et al., *External facilitators’ perceptions of internal facilitation skills during implementation of collaborative care for mental health teams: a qualitative analysis informed by the i-PARIHS framework*, “BMC Health Services Research” 2020, vol. 20, no. 1, article 165, <https://doi.org/10.1186/s12913-020-5011-3>

laboratory. Conversely, the theory of boundary-spanning precisely identifies the institutional mechanisms required to bridge experimental initiatives and formal policymaking, yet it largely presupposes an already functional and well-resourced laboratory organisation. Finally, the framework of individual competences and organisational roles delineates the internal determinants of operational efficacy, but tends to abstract from broader institutional rigidities and systemic constraints.

Consequently, only a tripartite synthesis combining these systemic, governance, and competence perspectives can fully explain why the Policy Lab in Eastern Wielkopolska (Chapter 4) encountered structural barriers unforeseen during its initial design phase. Furthermore, this synthesis demonstrates why the proposed ETPL model (Chapter 5) must simultaneously integrate all three analytical tiers: process architecture at the systemic level, boundary-spanning governance arrangements at the policy-linkage level, and formalised professional roles at the micro-competence level.

1.4. Research Gap: Why a Unified Model Is Needed

A systematic review of the literature on Policy Labs published since 2015 reveals a rich yet fragmented body of scholarship: extensive descriptive accounts of individual

initiatives, methodological surveys of tools and techniques, analyses of structural barriers and failure modes, alongside various proposed evaluation frameworks. Nevertheless, none of these scholarly strands has been synthesised into a coherent, operational model tailored specifically to the structural characteristics of energy transitions across the post-industrial regions of Central Europe. This overarching gap comprises four distinct dimensions, each of which serves as the conceptual foundation for a corresponding component of the ETPL model developed in Chapter 5.

First, the literature documents the pervasive pathology of ‘pilotism’, wherein policy experiments remain localised and temporary due to the absence of durable institutional anchoring, thereby failing to scale into systemic policy change. In the evidence base reviewed, documented instances of Policy Lab or Living Lab experiments exerting a direct influence on European Union-level policy remain exceptionally scarce, with empirical findings concentrated predominantly at the municipal or regional tiers. Recent scholarship indicates that formal institutional embedding, alongside the deliberate retention and circulation of institutional learning, constitutes an indispensable condition for transcending transient piloting³¹. Crucially, the

³¹ S. Radosevic, T. Zoretic, *EU smart specialization policy between experimentation and accountability: dynamic policy cycle perspective*, “European Planning Studies” 2024, vol. 32, no. 8, pp. 1693–

institutional mechanisms required to overcome pilotism within post-communist, coal-dependent regions remain largely unexamined.

Second, there is a notable absence of a formalised, standardised evaluation framework dedicated specifically to Policy Labs. Multiple conceptual approaches coexist without systematic comparative validation. Whilst frameworks appraising collective capabilities and contextual performance offer valuable analytical insights for Living Labs, and comparative models evaluate processes, outputs, and broader societal impacts, these disparate approaches do not yet constitute an agreed evaluation standard³².

1712, <https://doi.org/10.1080/09654313.2024.2359669>; M.I. Stan, T. Tasente, *From Co-Creation to Circular Cities: Exploring Living Labs in EU Governance Frameworks – A Literature Review*, “Central European Public Administration Review” 2025, vol. 23, no. 2, pp. 239–269, <https://doi.org/10.17573/cepar.2025.2.09>; D.T. Trei, J. Hornung, J. Rychlik, N.C. Bandelow, *From political motivation to scientific knowledge: classifying policy labs in the science-policy nexus*, “European Planning Studies” 2021, vol. 29, no. 12, pp. 2340–2356, <https://doi.org/10.1080/09654313.2021.1941785>; J.M. Lewis, *Policy design labs and uncertainty: can they innovate, and retain and circulate learning?*, “Policy Design and Practice” 2025, vol. 8, no. 3, pp. 338–350, <https://doi.org/10.1080/25741292.2025.2460821>

³² P. Martinelli, N. Canova, F. Bosisio, *Increasing Citizen Participation and Legitimacy: A Scoping Review on Effectiveness Indicators Used in the Evaluation of Living Labs*, “Journal of Participatory Research Methods” 2025, vol. 6, no. 4, <https://doi.org/10.35844/001c.145780>; P.J. Ferraro, *Counterfactual thinking and impact evaluation in environmental policy*, “New Directions for Evaluation” 2009, vol. 2009, no. 122, pp. 75–84, <https://doi.org/10.1002/ev.297>;

Furthermore, causal attribution presents an enduring methodological challenge, as the outcomes of experimental policy interventions are typically indirect, temporally lagged, and deeply context-dependent, which complicates the rigorous evaluation of operational frameworks such as the ETPL model proposed herein.

Third, while the literature provides comprehensive general typologies of Policy Lab failure—encompassing organisational factors (weak institutional anchoring and ambiguous role definition), institutional barriers (bureaucratic inertia and diffuse accountability), financial constraints (unstable grant funding and rigid budgetary cycles), political vulnerabilities (over-dependence on political patronage and contested democratic legitimacy), methodological misalignments (ill-suited toolkits and weak integration with evidence-based policymaking), and stakeholder challenges (superficial engagement and entrenched

K.P.W. Kok, M.G. van der Meij, P. Wagner, et al., *Exploring the practice of Labs for sustainable transformation: The challenge of 'creating impact'*, "Journal of Cleaner Production" 2023, vol. 388, article 135994, <https://doi.org/10.1016/j.jclepro.2023.135994>; J. Holmén, S. Williams, J. Holmberg, *Comparing sustainability transition labs across process, effects and impacts: Insights from Canada and Sweden*, "Energy Research & Social Science" 2022, vol. 89, article 102522, <https://doi.org/10.1016/j.erss.2022.102522>; I. Bouwma, S. Wigboldus, J. Potters, et al., *Sustainability Transitions and the Contribution of Living Labs: A Framework to Assess Collective Capabilities and Contextual Performance*, "Sustainability" 2022, vol. 14, no. 23, article 15628, <https://doi.org/10.3390/su142315628>

power asymmetries)]³³—these typologies have not been systematically translated into concrete design principles for laboratories operating under conditions of low participatory culture and institutional fragility, circumstances characteristic of many Central and Eastern European coal-mining regions, including Poland’s coal-mining regions.

Fourth, existing empirical accounts of policy translation mechanisms—specifically agenda-, arena-, and actor-linking—are overwhelmingly drawn from mature Western European contexts that benefit from established

³³ M. McGann, E. Blomkamp, J.M. Lewis, op. cit.; J. Lewis, *Policy design labs and innovation*, [in:] *Research Handbook of Policy Design*, 2022, <https://doi.org/10.4337/9781839106606.00034>; R. Forrester-Jones, R. Jawad, C. Zaki, G. Ismail, *Living policy Labs: A case study of collaborative dialogue about social protection to alleviate grievances and facilitate peaceful outcomes in Egypt*, “World Development” 2025, vol. 185, article 106790, <https://doi.org/10.1016/j.worlddev.2024.106790>; A. Whicher, op. cit.; M.V. Sirolli, A. Rocchi, A. Solimene, et al., *Applying open innovation practices to social innovation initiatives: building the coalescence innovation framework for urban regeneration*, “Sustainable Futures” 2025, vol. 10, article 100949, <https://doi.org/10.1016/j.sftr.2025.100949>; A. Pólvara, S. Nascimento, *Foresight and design fictions meet at a policy lab: An experimentation approach in public sector innovation*, “Futures” 2021, vol. 128, article 102709, <https://doi.org/10.1016/j.futures.2021.102709>; A. Wellstead et al., op. cit.; M. Nana, T. Hagggar, H. Boulding et al., op. cit.; K. Olejniczak et al., op. cit.; S. Hinrichs-Krapels et al., op. cit.; K.P.W. Kok, M.D. Gjeffen, B.J. Regeer, J.E.W. Broerse, *Unraveling the politics of ‘doing inclusion’ in transdisciplinarity for sustainable transformation*, “Sustainability Science” 2021, vol. 16, no. 6, pp. 1811–1826, <https://doi.org/10.1007/s11625-021-01033-7>

traditions of public sector innovation, high institutional trust, and predictable funding streams. This geographic bias is critical; research on data-driven policy innovation labs demonstrates that such entities frequently augment analytical capacity without necessarily building the political capacity required to secure policy uptake³⁴. Consequently, it remains uncertain whether these boundary-spanning mechanisms function effectively in less institutionally stable administrative environments where, as demonstrated in Chapter 4, laboratory duties are frequently assigned as supplementary tasks to civil servants who already bear substantial administrative burdens—a major structural barrier identified in the authors’ empirical case study.

To state the research gap explicitly: while the existing literature provides a sophisticated theoretical and methodological vocabulary for describing Policy Labs, it lacks a unified, operational model for energy transitions in the coal and lignite regions of Central Europe that systematically synthesises process architecture, governance arrangements, participatory toolkits, and validation mechanisms into a coherent operational cycle. Addressing this gap—drawing upon an original case study of the Policy

³⁴ A.H. Krogh, op. cit; S. Kim, A.M. Wellstead, T. Heikkila, *Policy capacity and rise of data-based policy innovation labs*, “Review of Policy Research” 2023, vol. 40, no. 3, pp. 341–362, <https://doi.org/10.1111/ropr.12494>

Lab in Eastern Wielkopolska (Chapter 4) and a comparative analysis of wider European practice (Chapter 3)—constitutes the primary research objective of this monograph and forms the core of Chapter 5, which elaborates the ETPL model structured around the Identification, Analysis, Recommendation, and Implementation (IARI) cycle.

CHAPTER II

ENERGY TRANSITION IN POLAND: POLICY FRAMEWORK AND THE GEOGRAPHY OF JUST TRANSITION

2.1. The Policy Framework for Poland's Energy Transition

2.1.1. Poland's Energy Policy until 2040

Poland's Energy Policy until 2040 (PEP2040), adopted by the Council of Ministers on 2 February 2021, constitutes the primary strategic document establishing the trajectory for the development of the national fuel and energy sector—the first such comprehensive framework adopted in twelve years³⁵. The strategy is structured around three

³⁵ ISAP, *Announcement of the Minister of Climate and Environment dated March 2, 2021, on the national energy policy through 2040, M.P. 2021, item 264*, Online System of Legal Acts, <https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WMP20210000264> [accessed:

foundational pillars: a just transition, encompassing targeted support for communities most severely affected by structural decarbonisation, particularly the populations of coal-mining regions; a zero-emission energy system aligned with EU climate neutrality objectives through the development of nuclear power and renewable energy sources; and improved air quality, addressing environmental targets through the modernisation of individual residential heating systems. In the wake of the Russian aggression against Ukraine, the strategy was supplemented with a fourth pillar: energy sovereignty, focused on diversifying fuel supply routes and accelerating investments in domestic generation capacity³⁶.

Among its key operational targets, PEP2040 mandates the installation of smart, remote-reading electricity meters across the majority of households by 2026, the development and modernisation of smart distribution grids, and the commissioning of Poland's first commercial nuclear power unit by 2033, followed by a phased expansion of

15.07.2026]; Ministry of Climate and Environment, *Poland's Energy Policy until 2040*, Ministry of Climate and Environment, Gov. pl Portal, <https://www.gov.pl/web/klimat/polityka-energetyczna-polski-do-2040-r> [accessed: 15.07.2026].

³⁶ Teraz Środowisko, *PEP2040 Updated with a New Pillar in Response to the War in Ukraine*, [teraz-srodowisko.pl](https://www.teraz-srodowisko.pl), <https://www.teraz-srodowisko.pl/aktualnosci/PEP2040-zaktualizowana-nowy-filar-11693.html> [accessed: 15.07.2026].

the nuclear fleet in subsequent years. A formal revision of the document, conducted in parallel with the National Energy and Climate Plan (NECP), was originally scheduled for completion by late 2024; however, this schedule was not met. According to the responsible ministry, the update of PEP2040 was rescheduled to commence no earlier than the second half of 2025³⁷. Consequently, at the time of writing, Poland continues to steer its regional transition policies in coal-dependent territories—including Eastern Wielkopolska—on the basis of a strategic blueprint adopted prior to the finalisation of the European Union's 'Fit for 55' legislative package and before the operational rollout of the Just Transition Fund.

2.1.2. National Recovery and Resilience Plan

The National Recovery and Resilience Plan (*Krajowy Plan Odbudowy*, KPO) encompasses a suite of structural reforms and strategic investments covering the 2020–2026 period, financed through the European Union's Recovery and Resilience Facility (RRF). The programmatic component dedicated to green energy and the reduction of energy

³⁷ Instrat, *Energy Policy of Poland – an update that will not happen*, Instrat Foundation, <https://instrat.pl/en/pep2040-no-update/> [accessed: 15.07.2026].

intensity encompasses the replacement of carbon-intensive heating sources, support for solar photovoltaics and solar thermal collectors, offshore wind farms, smart distribution grids, and hydrogen technologies³⁸. In 2023, a dedicated REPowerEU chapter was integrated into the KPO, introducing a series of reforms and investments backed by substantial financial allocations to accelerate strategic independence from Russian fossil fuels³⁹. The 2026 revision of the KPO redirects specific priorities towards security and strategic technologies. Coupled with the protracted delay in updating PEP2040, these adjustments underscore the considerable instability of the planning horizon within which regional transition initiatives must operate⁴⁰.

³⁸ European Commission, *Analysis of the Recovery and Resilience Plan of Poland*, Commission Staff Working Document, SWD(2023) 381 final, Brussels, 21 November 2023, sections 2.1–2.2 and 3.12, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023SC0381> [accessed: 10.08.2026].

³⁹ Ibid.

⁴⁰ TPA Poland, *Revision of the National Recovery Plan (KPO) in 2026 – a shift in priorities toward security, strategic technologies, and social services*, TPA Poland, <https://www.tpa-group.pl/pl/news/rewizja-krajowego-planu-odbudowy-w-2026-r-przesuniecie-priorytetow-w-strone-bezpieczenstwa-technologie-strategicznosci-i-uslug-spoecznych/> [accessed: 15.07.2026].

2.1.3. The Just Transition Fund and Territorial Just Transition Plans

The Just Transition Fund (JTF), the primary funding pillar of the EU's Just Transition Mechanism, allocated substantial financial resources to Poland to mitigate the socio-economic impact of the climate transition across five coal-mining regions⁴¹. A mandatory prerequisite for accessing these allocations was the preparation by each respective regional authority of a Territorial Just Transition Plan (TJTP)—a statutory programming document covering the period through to 2030 that delineates the territories most vulnerable to industrial phase-out and identifies priority axes for intervention. The Territorial Just Transition Plans for all five Polish beneficiary regions were formally approved by the European Commission in December 2022⁴². JTF resources are designated, *inter alia*, to finance the reskilling and upskilling of fossil-fuel sector workforces, support local job creation in emerging

⁴¹ European Commission, *3.85 billion euros for five Polish regions*, Delegation of the European Commission to Poland, https://poland.representation.ec.europa.eu/news/385-mld-euro-dla-pieciu-polskich-regionow-2022-12-05_pl [accessed: 15.07.2026].

⁴² Just Transition, *Territorial Just Transition Plans for Polish coal-mining regions adopted!*, sprawiedliwa-transformacja.pl, <http://sprawiedliwa-transformacja.pl/2022/12/06/terytorialne-plany-sprawiedliwej-transformacji-dla-polskich-regionow-weglowych-przyjete/> [accessed: 15.07.2026].

low-carbon industries, and facilitate economic diversification in mono-industrial areas.

2.2. The Geography of Just Transition: Five Coal-Mining Regions

JTF resources were allocated across five Territorial Just Transition Plans, covering territories characterised by divergent industrial profiles, mining-sector employment levels, and restructuring trajectories. Table 3 summarises the key characteristics of the Polish coal regions covered by the respective TJTPs.

Table 3. Polish Coal Regions Covered by Territorial Just Transition Plans

Region (TJTP)	Territorial Scope & Characteristics	Strategic Context & Notes
<i>Silesia and Western Małopolska</i>	Upper Silesian-ZagłębieMetropolis, Oświęcim subregion	Represents the largest hard-coal mining basin in the European Union in terms of direct employment and industrial concentration
<i>Lower Silesia (Wałbrzych)</i>	Wałbrzych Subregion	Hard-coal extraction ceased in the late 1990s; characterised by a protracted post-mining economic restructuring trajectory.
<i>Łódź Province (Bełchatów)</i>	Bełchatów County and adjacent municipalities	Location of Europe's largest single-point open-cast lignite mine and thermal power generation complex.

Region (TJTP)	Territorial Scope & Characteristics	Strategic Context & Notes
<i>Greater Poland (Eastern Wielkopolska)</i>	Konin and neighbouring counties	Identified in national monitoring reports as leading the rate of JTF resource absorption in Poland, underpinned by robust public participation during TJTP design.

Source: Authors' own elaboration.

Eastern Wielkopolska, which forms the dedicated case study in Chapter 4, is distinguished from other Polish coal basins not only by the institutional maturity of its regional transition operator, but also by the documented depth of stakeholder engagement achieved during the formulation of its TJTP. Independent comparative analyses have appraised this participatory process as significantly more substantive and inclusive than those conducted in other transition regions⁴³. This confluence of established administrative capacity and prior participatory practice renders Eastern Wielkopolska an optimal setting for piloting experimental governance instruments, including the ETPL model proposed in Chapter 5.

⁴³ Ślimko E., Bartecka M., Pogoda A., *Territorial Just Transition Plans for Polish Coal Regions*, Alliance of Associations Polish Green Network and CEE Bankwatch Network, October 2021, pp. 7, 13, https://bankwatch.org/wp-content/uploads/2021/10/2021-10-20_TJTP_Poland.pdf [accessed: 15.07.2026].

2.3. Institutional Barriers to Governance in the Polish Coal Context

The academic literature on Policy Labs in post-industrial and coal-dependent regions identifies a spectrum of institutional barriers directly relevant to the Polish context, notwithstanding the fact that existing scholarship predominantly examines German, British, and Scandinavian cases. Deficits in local administrative capacity, bureaucratic departmental silos, and political inertia feature prominently among the documented obstacles constraining the adoption of experimental instruments by subnational governance structures⁴⁴. These barriers assume particular salience within Polish coal basins, where the decarbonisation trajectory coincides with entrenched socio-economic tensions stemming from industrial restructuring, against a background of strategic policy instability (as outlined in Subsection 2.1).

One of the few empirical studies directly addressing the Polish context—examining governance across peripheral, medium-sized cities—demonstrates that local policymaking within a multi-level governance framework depends

⁴⁴ A.H. Krogh, op. cit.; D. Lazarevic, S. Mokka, P. Kivimaa, et al., *Municipal experimental policy engagements in the built environment*, “Environmental Innovation and Societal Transitions” 2024, vol. 52, article 100888, <https://doi.org/10.1016/j.eist.2024.100888>

critically upon the capacity of municipal authorities to mediate between regional and national tiers. Furthermore, municipalities with weaker institutional standing systematically forfeit strategic influence over the transition trajectory in favour of metropolitan centres⁴⁵. This finding aligns with broader observations in Policy Lab scholarship, where institutional capacity deficits reinforce path dependency rather than facilitating systemic transformation⁴⁶. This dynamic carries immediate operational implications for secondary urban centres in areas such as Eastern Wielkopolska, where Konin serves as the primary, yet not exclusive, institutional anchor of the transition process.

A second barrier of particular relevance to Poland concerns the allocation and deployment mechanisms governing just transition finance. A multi-level analysis of Just

⁴⁵ R. Gajewski, R. Knippschild, *Local policy-making within the multilevel system: A study of governance in peripheral(ised) medium-sized cities undergoing socio-economic transformation in Saxony, Germany and Lower Silesia, Poland*, "Urban Studies" 2024, vol. 61, no. 10, pp. 1891–1914, <https://doi.org/10.1177/00420980231221085>

⁴⁶ E. Brutschin, C. Bertram, L.B. Baptista, et al., *Aligning differentiated mitigation capacity with the Paris agreement goals*, "Environmental Research: Climate" 2025, vol. 4, no. 4, article 045012, <https://doi.org/10.1088/2752-5295/ae0ea5>; K.F. Roemer, J.H. Haggerty, *The energy transition as fiscal rupture: Public services and resilience pathways in a coal company town*, "Energy Research & Social Science" 2022, vol. 91, article 102752, <https://doi.org/10.1016/j.erss.2022.102752>

Transition Fund implementation in Belgium indicates that the substantive inclusion of marginalised communities in resource design and budgetary allocation demands dedicated institutional mechanisms; it cannot be presumed to occur merely through the establishment of a geographically targeted fund⁴⁷. Although derived from a single national jurisdiction rather than a cross-European comparative sample, this evidence reinforces the broader premise that capital allocations must be coupled with institutionalised participatory distribution procedures and comprehensive economic diversification strategies⁴⁸.

A third critical barrier relates to public acceptance and civic engagement within Central European energy transitions. A comparative study of three Central European coal basins identifies inclusive governance, transparent

⁴⁷ J. Clement, L. Alarda, A. Ochojski, N. Crutzen, *Engaging marginalized communities in multi-level transformative innovation policy: The case of the Just Transition Fund*, “Technological Forecasting and Social Change” 2025, vol. 212, article 124002, <https://doi.org/10.1016/j.techfore.2025.124002>

⁴⁸ K. van de Loo, *Tools for Change – How the EU Wants to Achieve the Coal Transition*, “Mining Report” 2021; A. Drobniak, *Stakeholder Expectations Regarding Just Transition – Conclusions from Initial Interviews and Consultations*, [in:] *Energy and Climate Transition – Selected Dilemmas and Recommendations* 2021; N. Mohlakoana, M. Lokhat, N. Dolšak, A. Prakash, *Varieties of just transition: Public support in South Africa’s Mpumalanga coal community for different policy options*, “PLOS Climate” 2023, vol. 2, no. 5, article e0000205, <https://doi.org/10.1371/journal.pclm.0000205>

communication, procedural justice, and tangible localised dividends as indispensable determinants of socially viable transition pathways, underscoring that tokenistic or deficient stakeholder engagement actively destabilises regional consensus⁴⁹. In a related vein, analyses of the socio-technical dimensions of energy storage infrastructure demonstrate that engineering and infrastructural facets of the transition are inextricably linked to organisational capacity and societal acceptance, rather than existing as discrete, purely technical challenges⁵⁰.

2.4. The Policy Lab as a Response to the Polish Institutional Context

A synthesis of the strategic policy framework (Subsection 2.1), the territorial allocation of the JTF (Subsection 2.2), and prevailing governance barriers (Subsection 2.3) yields four central conclusions regarding the positioning of

⁴⁹ L. Topaloglou, A. Kouskoura, O. Janikowska, et al., *The interplay between just energy transition and community engagement: Assessing collaborative pathways in Greece, Poland and Bulgaria*, “Energy Research & Social Science” 2024, vol. 116, article 103708, <https://doi.org/10.1016/j.erss.2024.103708>

⁵⁰ M. Kruczek, M. Markowska, A. Servou, et al., *Navigating Socio-Technical Challenges in Energy Efficiency: Case Studies on Hybrid Pumped-Hydropower Storage in Poland and Greece*, “Energies” 2025, vol. 18, no. 3, p. 599, <https://doi.org/10.3390/en18030599>

the Policy Lab—and specifically the ETPL model—within the Polish institutional context.

First, the instability of the strategic planning horizon, caused by delays in updating PEP2040 and the approaching conclusion of the current KPO and JTF programmatic periods, creates an institutional window wherein experimental governance tools can bridge successive planning cycles. By generating actionable policy recommendations independently of the operational pace of national strategic updates, such instruments operationalise the boundary-spanning mechanisms articulated in Chapter 1, embedding experimental findings into formal administrative decision-making structures irrespective of overarching policy-cycle friction⁵¹.

Second, the marked disparities in administrative capacity across the five TJTP territories demonstrate that a transferable framework, such as the ETPL model proposed in Chapter 5, must accommodate differentiated entry baselines rather than presuming a uniform threshold of institutional readiness. Eastern Wielkopolska, characterised by relatively robust administrative capacity and an established tradition of participatory governance, represents an optimal pilot environment. Conversely, deploying the model in territories with weaker institutional endowments will

⁵¹ A.H. Krogh, *op. cit.*

necessitate targeted capacity-building support (as elaborated in Subsection 5.5).

Third, the documented insufficiency of financial transfers operating in the absence of structured participatory processes provides clear justification for the principle of mandatory multi-stakeholder engagement⁵² within the ETPL framework (Subsection 5.1). The Policy Lab does not substitute for the Just Transition Fund; rather, it functions as a complementary institutional mechanism facilitating the structured, iterative stakeholder deliberation that statutory funding instruments inherently lack.

Fourth, persistent deficits in public acceptance and civic engagement demonstrate that experimental public policy instruments cannot rely on ad hoc or informal consultation. The literature underscores that policy efficacy depends upon tailoring participatory instruments to specific socio-cultural and institutional contexts⁵³. Transparent communication, procedural justice, and tangible compensatory outcomes do not emerge as incidental by-products of a laboratory's establishment; they require an explicitly designed methodological toolkit. This imperative directly

⁵² OECD, *Implementation Toolkit: OECD Recommendation on Regional Development Policy*, Paris 2025, <https://www.oecd.org/en/about/projects/implementing-the-oecd-recommendation-on-regional-development-policy-toolkit.html> [accessed: 15.07.2026].

⁵³ M.S. Reed, *Stakeholder participation for environmental management: A literature review*, "Biological Conservation" 2008, pp. 2417–2431.

informs the dedicated operational framework for participatory tools (Subsection 5.4) and underpins mandatory multi-stakeholder participation as a foundational pillar of the model.

In summary, Poland is advancing the decarbonisation of five coal-dependent regions within a policy architecture that, despite substantial capital allocation, remains unevenly executed across subnational territories⁵⁴. Eastern Wielkopolska emerges within this landscape as a leading region in both JTF absorption and participatory governance, establishing it as the primary empirical reference point for the case study in Chapter 4 and the ETPL model formulated in Chapter 5. Chapter 4 subsequently evaluates how these macro-level and regional dynamics manifested in the operational practice of the Policy Lab in Konin and neighbouring counties, examining the institutional barriers and mechanisms identified across the broader European literature.

⁵⁴ J. Mazurkiewicz, J. Frankowski, A. Prusak, Coal Regions in Transition: The Role of the Just Transition Fund, IBS Research Report, 2026.

CHAPTER III

EUROPEAN EXPERIENCES: A COMPARATIVE CASE STUDY

3.1. The Ruhr Region: Transition Super-Labs and the Shift Towards a Hydrogen Economy (Germany)

The case most extensively documented in the empirical literature and structurally closest to Eastern Wielkopolska is Germany's Ruhr Region, a historic centre of hard-coal mining and heavy industry undergoing structural decarbonisation anchored in a developing hydrogen economy. A dedicated Policy Lab initiative in the region brought together policymakers, public administrators, industry representatives, academic researchers, and civil society actors to co-create region-specific transition pathways, formulate strategic solution portfolios, and identify emerging socio-economic conflicts. Stakeholder participation, however, proved uneven: civil society organisations were

excluded from the initial two phases and integrated only during the third phase, leaving an unresolved structural tension between the aspiration for broad co-creation and the timing of civic engagement⁵⁵.

This model provides a potentially transferable reference point for territories navigating carbon-intensive industrial legacies. Specifically, it combines binding climate commitments with localised, participatory implementation, incorporating conflict-identification mechanisms prior to resource-intensive execution phases. Nevertheless, institutional transfer requires careful adaptation to the governance architecture of the recipient region. The Ruhr case further demonstrates that a regional experimental laboratory benefits substantially from formal anchoring within statutory spatial and industrial planning frameworks; absent such linkages, even a methodologically rigorous participatory process risks institutional isolation. Furthermore, the delayed inclusion of civil society and the incomplete execution of the final project phase serve as clear caveats against adopting the Ruhr model as an off-the-shelf blueprint⁵⁶.

⁵⁵ J. Wiemann, T. Meister, M. Kiese, *Experimentelle Governance für die Transformation zur Klimaneutralität: Transition Super Lab für den Aufbau der Wasserstoffwirtschaft im Ruhrgebiet*, “Standort” 2025, vol. 49, no. 4, pp. 281–287, <https://doi.org/10.1007/s00548-025-00966-w>

⁵⁶ Ibid.

3.2. German Lignite-Mining Regions: Advisory Committees and Transformation Platforms

The second pillar of the German comparative experience comprises a triad of related initiatives across lignite-mining basins—a branch of extractive industry structurally most analogous to the extraction and power generation profile of Eastern Wielkopolska. The German federal advisory commission established to formulate a roadmap for the phase-out of coal-fired power generation (*Kommission für Wachstum, Strukturwandel und Beschäftigung*), despite extensive formal multi-stakeholder representation, failed to secure balanced decision-making influence. Public authorities and corporate incumbents dominated proceedings, whereas non-state actors—notably trade unions and environmental civil society organisations—exercised limited leverage over the final policy recommendations⁵⁷. A comparative appraisal alongside a corresponding Canadian coal transition task force indicates that while the

⁵⁷ J. Radtke, D. Löw-Beer, *Legitimizing sustainability transitions through stakeholder participation: Evaluating the Coal Commission in Germany*, “Energy Research & Social Science” 2024, vol. 116, article 103667, <https://doi.org/10.1016/j.erss.2024.103667>; C. Hauenstein, I. Braunger, A. Krumm, P.Y. Oei, *Overcoming political stalemates: The German stakeholder commission on phasing out coal*, “Energy Research & Social Science” 2023, vol. 103, article 103203, <https://doi.org/10.1016/j.erss.2023.103203>

Canadian model proved more responsive to local community priorities, it faced comparable difficulties in reconciling structurally divergent interests⁵⁸.

The Rhenish mining area, the first of the two German lignite basins examined in this comparative review, instituted a transformation platform mechanism designed to stimulate actionable, interdisciplinary knowledge creation⁵⁹. Concurrently, the regional transformation framework developed for Lusatia offers an empirical model of economic diversification tailored to an active lignite-mining region, serving as one of the closest structural counterparts to Konin and Eastern Wielkopolska within the comparative dataset⁶⁰. Lusatia illustrates how large-scale industrial restructuring can be systematically linked to long-term regional development programmes. Taken together, these cases substantiate the necessity of context-sensitive inter-regional learning over simplistic policy imitation: regional

⁵⁸ K. Gürtler, D. Löw-Beer, J. Herberg, *Scaling just transitions: Legitimation strategies in coal phase-out commissions in Canada and Germany*, “Political Geography” 2021, vol. 88, article 102406, <https://doi.org/10.1016/j.polgeo.2021.102406>

⁵⁹ A. Förster, E. Strobel, S. Bösch, et al., *The Platform Approach: Stimulating Transformative Knowledge Creation for the Rhenish Lignite Mining Area*, “disP - The Planning Review” 2022, vol. 58, no. 3, pp. 22–39, <https://doi.org/10.1080/02513625.2022.2158590>

⁶⁰ M. Breul, *Setting the course for future diversification: the development of a regional transformation strategy in a German lignite mining region*, “Regional Studies, Regional Science” 2022, vol. 9, no. 1, pp. 581–599, <https://doi.org/10.1080/21681376.2022.2120413>

authorities must adapt, rather than uncritically replicate, governance mechanisms developed in territories exhibiting analogous structural conditions⁶¹.

3.3. Transferable Models from Smaller and Less Affluent Regions: Latvia and the Basque Country

Two empirical cases situated beyond the mainstream Policy Lab literature demonstrate that experimental governance instruments are also accessible to public administrations with smaller institutional footprints than those in Germany or the Scandinavian countries, rendering them highly pertinent to the Polish context. A Latvian energy-sector modelling laboratory developed an advanced system-dynamics model that integrates regional empirical data with stakeholder input, supporting both single-player and multiplayer policy-simulation games to explore strategic scenarios interactively⁶². This case highlights how digital

⁶¹ A. Matern, M. Špaček, J. Theuner, et al., *Strategies for energy transition and regional development in European post-coal mining regions: Ústí Region, Czechia, and Lusatia, Germany*, “Territory, Politics, Governance” 2025, vol. 13, no. 7, pp. 1001–1022, <https://doi.org/10.1080/21622671.2023.2231972>

⁶² A. Blumberga, *Using an interactive simulation tool of national energy and climate policy planning to explore environmental policy options from the perspectives of different interest groups*, “Systems Research and Behavioral Science” 2024, vol. 41, no. 6, pp. 876–893, <https://doi.org/10.1016/j.sbs.2024.100000>

simulation and participatory validation can facilitate policy learning, whilst demonstrating that such tools nonetheless require sustained institutional investment.

Concurrently, the Basque Smart Specialisation Strategy functions as a regional laboratory for energy transition, aligning European Union objectives with regional innovation pathways through holistic, cross-cutting experimentation⁶³. This case illustrates how regional development strategies can serve as experimental testbeds for adapting EU policy and fostering interregional learning. However, a crucial caveat remains: operationalising this mechanism presumes the prior establishment of a mature regional innovation ecosystem—a structural precondition that many Polish coal-mining regions, including Eastern Wielkopolska, have yet to attain to a comparable degree.

3.4. Rotterdam–The Hague and Austria: Energy Justice and Collaborative Governance

The Rotterdam–The Hague metropolitan region in the Netherlands illustrates the deployment of a Policy Lab as an experimental governance arena that mobilises

doi.org/10.1002/sres.3074; A. Blumberga, I. Pakere, Ģ. Bohvalovs, et al., *Impact of the 2022 energy crisis on energy transition awareness in Latvia*, “Energy” 2024, vol. 306, article 132370, <https://doi.org/10.1016/j.energy.2024.132370>

⁶³ E. Magro, J.R. Wilson, M.J. Aranguren, *Smart Specialization Strategies and Energy Transition: An Exploratory Analysis of the Case of the Basque Country*, “Ekonomiaz” 2021.

cross-sectoral actor networks to co-create strategies capable of informing formal transport and spatial planning policies⁶⁴. Furthermore, this region served as the empirical focus of an energy justice assessment, which identified the socio-demographic groups that remain most vulnerable to the structural costs of transition despite formally inclusive participatory mechanisms⁶⁵. This analytical insight directly informs the evaluation of the Policy Lab in Eastern Wielkopolska (Chapter 4), where questions regarding the substantive, rather than merely procedural, inclusivity of stakeholder engagement remain paramount.

The Austrian model region of Pinzgau, in turn, demonstrates the decisive role of governance architecture in securing process legitimacy: decentralised and inclusive governance arrangements fostered institutional trust, whereas centralised coordination diminished the substantive value of participation despite the nominal involvement of comparable stakeholder groups. This empirical finding aligns with broader Living Lab scholarship demonstrating

⁶⁴ D. Loorbach, T. Schwanen, B.J. Doody, et al., *Transition governance for just, sustainable urban mobility: An experimental approach from Rotterdam, the Netherlands*, “Journal of Urban Mobility” 2021, vol. 1, article 100009, <https://doi.org/10.1016/j.urbmob.2021.100009>

⁶⁵ A. Martínez-Reyes, S. Wolters, O. Luijk, et al., *Who is vulnerable in regional energy transitions? An intersectional energy justice analysis of the Rotterdam-the Hague region*, “Energy Research & Social Science” 2025, vol. 119, article 103859, <https://doi.org/10.1016/j.erss.2024.103859>

that value creation is determined by the specific modalities through which stakeholders are integrated into governance and organisational learning processes⁶⁶. A parallel investigation of two Austrian energy regions confirms that obstacles to subnational innovation and low-carbon policy implementation are systemic, spanning both regulatory constraints and local administrative capacity deficits⁶⁷. This provides a clear analytical baseline for examining institutional barriers within the Polish regional landscape (Chapter 2).

3.5. Other Coal-Dependent Regions at a Glance

The empirical literature also encompasses supplementary, albeit less extensively documented, reference cases that warrant consideration as avenues for future inquiry. The

⁶⁶ S. Sedlacek, T. Tötzer, D. Lund-Durlacher, *Collaborative governance in energy regions – Experiences from an Austrian region*, “Journal of Cleaner Production” 2020, vol. 256, article 120256, <https://doi.org/10.1016/j.jclepro.2020.120256>; E. Malakhata, O. Shafqat, A. Sandoff, L. Thuvander, *Positive energy districts and energy communities: how living labs create value*, “Buildings and Cities” 2025, vol. 6, no. 1, pp. 783–799, <https://doi.org/10.5334/bc.630>

⁶⁷ J. Irshaid, J. Mochizuki, T. Schinko, *Challenges to local innovation and implementation of low-carbon energy-transition measures: A tale of two Austrian regions*, “Energy Policy” 2021, vol. 156, article 112432, <https://doi.org/10.1016/j.enpol.2021.112432>

Slovak Upper Nitra coal basin provides an analysis of decarbonisation amidst severe structural constraints, offering a critical empirical perspective that counterbalances the generally affirmative assessments found in studies of German regions⁶⁸. The Czech region of Ústí is examined in direct comparison with German cases as a second Central European, post-socialist instance of regional development aligned with the energy transition⁶⁹ owing to a shared administrative heritage across Central and Eastern Europe. It represents the closest institutional analogue to Polish coal basins among the comparative cases examined.

Beyond Europe, the Canadian experience with a federal advisory task force on coal transition offers an instructive counterpoint to the German model, demonstrating that the formal establishment of a multi-stakeholder advisory body does not inherently secure balanced influence over policy decisions, irrespective of the national governance context⁷⁰.

⁶⁸ R. Filčák, D. Škobla, *Decarbonization and the Structural Challenges of the Neoliberal State: The Case of the Coal Region in Slovakia*, “Green and Low-Carbon Economy” 2025, vol. 3, no. 2, pp. 151–158, <https://doi.org/10.47852/bonviewglce42022597>

⁶⁹ A. Matern, M. Špaček, J. Theuner et al., op. cit.

⁷⁰ K. Gürtler, D. Löw-Beer, and J. Herberg, op. cit.

3.6. Comparative Analysis: Success Factors, Common Gaps, and Transferability to Poland

The comparative corpus comprises seven primary European reference regions and two supplementary European cases—amounting to nine mapped reference regions in total (A–I)—alongside one non-European counterpoint (Canada). Eastern Wielkopolska is analysed independently as the authors’ dedicated Policy Lab case study (J). This analytical architecture establishes the foundation for identifying three recurrent success factors and one pervasive structural gap, which together constitute the conceptual baseline for the ETPL model formulated in Chapter 5.

3.6.1. Three Common Success Factors

Across the examined cases, recurrent enabling conditions encompass three primary factors. First, a robust institutional anchor is essential: initiatives are typically spearheaded by an entity with an established institutional standing—such as a university, a regional development agency, or a formally mandated transformation platform—rather than by an ad hoc body lacking dedicated organisational backing⁷¹.

⁷¹ J. Wiemann, T. Meister, M. Kiese, *op. cit.*; M. Breul, *op. cit.*; A. Blumberga, *op. cit.*

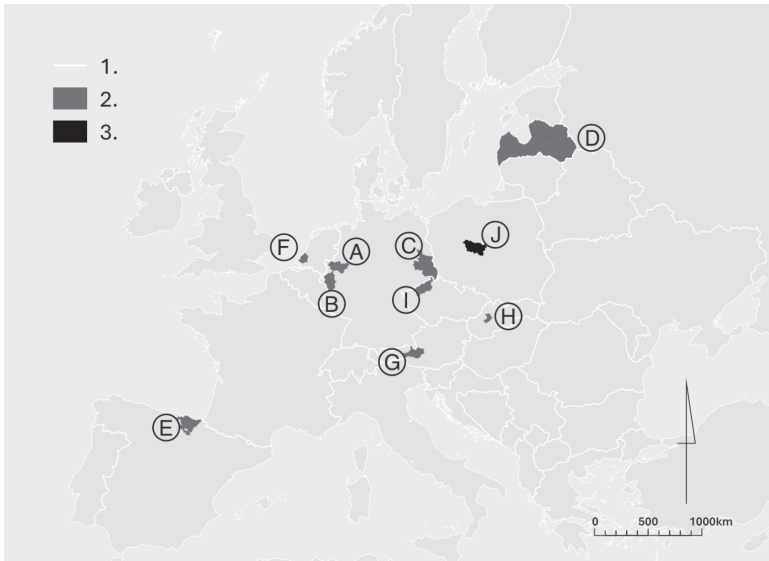


Figure 1. Geographical distribution of the European regions under analysis

Legend: 1. National borders; 2. Comparative reference regions: A – Ruhr Region, B – Rhenish Lignite Mining Area, C – Lusatia, D – Latvia, E – Basque Country, F – Rotterdam–The Hague, G – Pinzgau, H – Upper Nitra Region, I – Ústí Region; 3. Empirical Policy Lab case study implemented in Eastern Wielkopolska (J).

Source: Authors' own elaboration based on the locations discussed in Chapter 3.

Second, adaptive multi-level governance effectively integrates top-down strategic orientation (encompassing long-term vision, policy continuity, and funding mechanisms) with bottom-up civic engagement grounded in local knowledge and procedural inclusion. This emerges consistently across the transition literature as an effective operational framework, although not as a universally

applicable panacea⁷². Third, the empirical evidence demonstrates that territories derive substantial benefits from interregional learning networks when they systematically adapt, rather than uncritically replicate, policy instruments developed in regions exhibiting analogous structural characteristics⁷³.

3.6.2. A Common Shortcoming: The Lack of a Formal Mechanism for Translating Findings into Policy Decisions

The comparative analysis also reveals a pervasive structural deficit across multiple initiatives: even methodologically rigorous participatory processes—such as the German coal commission or the Austrian model energy regions—do not guarantee that all stakeholder groups exert substantive influence over final policy decisions. Nominal representation does not inherently equate to decision-making leverage; the German commission, in particular, illustrates that state actors and established incumbents frequently retain a decisive hold over outcomes within formally inclusive deliberative arenas. This critical deficit—namely, the absence of an institutionalised pathway

⁷² K. Gürtler, D. Löw-Beer, J. Herberg, *op. cit.*; S. Sedlacek, T. Tötzer, D. Lund-Durlacher, *op. cit.*

⁷³ A. Matern, M. Špaček, J. Theuner et al., *op. cit.*

linking civic and expert deliberation directly to formal public policy outputs—serves as the primary rationale for the Recommendation stage of the ETPL cycle formulated in Chapter 5, which incorporates a formal policy recommendation document alongside structured consultation with statutory decision-makers. Table 4 synthesises the comparative findings across the examined cases and assesses their transferability to Eastern Wielkopolska.

Table 4. Comparative Cases and Their Transferability to Eastern Wielkopolska

Case Study	Key Mechanism / Primary Contribution	Transferability to Eastern Wielkopolska
Ruhr Region (Germany)	Multi-stakeholder co-creation, phased participation, conflict identification	Potentially high; requires institutional adaptation
German advisory commission	Formal advisory body; illustrates risks regarding the dominance of public actors	Moderate; warrants governance-related caution
Rhenish Lignite Mining Area, Lusatia (Germany)	Transition platform mechanisms, lignite-mining structural context	High; close structural analogy requiring contextual adaptation
Latvia	Participatory system-dynamics modelling	Potentially high for smaller administrations; methodological adaptation required
Basque Country (Spain)	Alignment of regional specialisation strategy with EU policy objectives	Conditional; contingent upon the prior existence of a mature innovation strategy
Rotterdam–The Hague (Netherlands)	Network mobilisation, energy justice and equity analysis	Moderate; operates within a substantially different institutional context

Case Study	Key Mechanism / Primary Contribution	Transferability to Eastern Wielkopolska
Pinzgau (Austria)	Decentralised governance fostering process legitimacy and trust	High; governance architecture well-suited for regional adaptation
Upper Nitra Region (Slovakia), Ústí Region (Czech Republic), Canada	Supplementary empirical reference points on structural decline and task-force governance	To be examined in future comparative research

Source: Authors' own elaboration.

CHAPTER IV

POLICY LAB FOR EASTERN WIELKOPOLSKA: AN ORIGINAL CASE STUDY

4.1. Regional Context: Eastern Wielkopolska in Transition

Eastern Wielkopolska, comprising the city of Konin and four neighbouring counties, is defined by two parallel, mutually reinforcing structural processes, both of which must be addressed concurrently by any intervention designed within the Policy Lab. The first is the structural decline of the lignite-based economy, driven by deposit depletion, the phased decommissioning of open-cast mines, and a substantial reduction in employment across the regional energy conglomerate. The second is severe, protracted depopulation resulting from long-term negative demographic trends. The confluence of these two pressures means that the regional decarbonisation pathway must directly confront the simultaneous erosion of local municipal revenue

bases—a central dilemma identified through the Policy Lab’s diagnostic work.

The foundational baseline for all Policy Lab activities is the territorial climate-neutrality strategy adopted by the region’s local self-governments. This strategy establishes operational targets for reducing greenhouse gas emissions, expanding the share of renewable energy, and enhancing energy efficiency by 2030 across six key pillars: low-emission energy, a zero-carbon economy, the bioeconomy, sustainable construction, transport, and an entrepreneurial environment for the green economy. The overarching mission of the Policy Lab is to provide regional decision-makers with evidence-based feedback to support the implementation of this strategy. A critical appraisal conducted by the authors within the Policy Lab revealed that the original strategy prioritised technical and engineering dimensions whilst neglecting social and participatory considerations. This internal diagnosis prompted a systematic redesign of the laboratory’s participatory toolkit, aligning with wider scholarly literature warning that deficient stakeholder engagement undermines just transition pathways (even though that literature does not establish uniform underestimation across all Central and Eastern European regions⁷⁴.

⁷⁴ L. Topaloglou et al., *op. cit.*; R. Gajewski and R. Knippschild, *op. cit.*

Among the five Polish regions supported by the Just Transition Fund, Eastern Wielkopolska is distinguished by the highest level of strategic planning preparedness, possessing an adopted, operationalised climate-neutrality roadmap and—uniquely among the beneficiary regions—a dedicated Policy Lab functioning as a permanent mechanism for channelling expert knowledge into policy practice. The region's compact territorial scale is conceptualised not as a structural constraint, but as a strategic piloting advantage, positioning it as an agile testbed for policy solutions that prove difficult to test at a metropolitan scale.

4.2. Policy Lab Architecture: Design and Governance

The Policy Lab for Eastern Wielkopolska operates within the framework of a broader regional transition project funded under the European Union's LIFE programme. It is implemented by a consortium co-ordinated by a regional research and implementation institution, supported by institutional partners executing complementary project packages and by the Marshal's Office of the Wielkopolska Region as a pivotal partner securing political and institutional legitimacy. The co-ordinating entity executes both administrative and monitoring functions across the

consortium—analysing interim reports, identifying emerging best practices and systemic bottlenecks, and formulating corrective steering recommendations throughout project execution. This operational structure itself exemplifies an internal organisational learning mechanism.

As documented in internal project reports, the implementation of the Policy Lab work packages proceeded in full compliance with the provisions of the grant agreement and the approved financial envelope, adhering strictly to the operational schedule without necessitating formal modifications to the primary work plan. This procedural discipline is methodologically significant: it enables an analytical distinction between barriers stemming from stakeholder engagement dynamics and potential managerial or budgetary deficits, none of which manifested in the empirical case under analysis.

The Policy Lab architecture was conceived around a sequential cycle of expert interventions, each corresponding to a distinct cognitive and analytical phase: the identification of regional challenges and international benchmarks; the in-depth analysis and operationalisation of policy recommendations; direct engagement with local stakeholders to stress-test preliminary findings; and, ultimately, policy translation and evaluation. This operational progression constitutes the empirical prototype for the four-stage Identification–Analysis–Recommendation–Implementation

(IARI) cycle formulated in Chapter 5 as the generalised ETPL model. Consequently, the theoretical model was not superimposed deductively upon the Eastern Wielkopolska pilot, but was inductively abstracted from this empirical practice.

In practice, the first two stages of this cycle—identification and analysis—were delivered within prescribed timelines and with comprehensive thematic coverage (detailed in Subsection 4.3). However, the third stage underwent substantial methodological reconfiguration during execution: rather than sustaining analytical deliberations exclusively within expert circles, the co-ordinating institution shifted the focus of this phase towards testing and deliberating the assembled empirical insights directly with local communities. This strategic adaptation, codified in the concept note for the ‘Energy of Dialogue’ workshops (Subsection 4.3.4), represented an explicit, purposive response to the procedural shortcomings of the participatory component encountered in Stage II (Subsection 4.5). It provides the clearest demonstration that the Policy Lab operated as an adaptive vehicle for iterative policy learning rather than as a rigid execution of a predetermined linear work plan. This empirical adaptation forms the cornerstone of one of the five core pillars of the ETPL model formulated in Chapter 5: the principle of iterative policy development grounded in a dynamic theory of change architecture.

The organisational architecture of the Policy Lab relies on the structured collaboration of two complementary expert clusters, whose capacity expanded across project milestones: a socio-economic team specialising in regional geography, spatial planning, and local economics, alongside a dedicated energy systems team comprising researchers across diverse career stages. This interdisciplinary configuration, drawing expertise from independent research institutions across Poland, substantiates a core premise of the Policy Lab's foundational blueprint: namely, that cultivating an effective knowledge base requires tapping into a diverse geographical and disciplinary spectrum rather than relying exclusively on a single regional institution or narrow academic silo. This expert network extended well beyond the core research team to encompass dozens of domestic and international scholars, providing empirical evidence that the imperative of epistemic diversity and multi-perspectival scrutiny was systematically fulfilled.

The methodology developed for identifying comparative reference regions warrants particular attention as an innovative analytical mechanism: both expert teams were tasked with independently selecting European transition regions exhibiting the highest structural correspondence to Eastern Wielkopolska. A high degree of methodological convergence between these independent assessments was treated as validation of regional comparability. This approach

effectively functioned as an ad hoc expert triangulation protocol, serving a purpose analogous to the formal Delphi consensus technique deployed within the generalised ETPL framework to validate policy recommendations—with the distinction that in the Eastern Wielkopolska pilot, triangulation was utilised at the upstream stage of input selection rather than downstream model validation.

The governance framework of the Eastern Wielkopolska Policy Lab relies not on a rigid, hierarchical decision-making body (such as a formal supervisory board or steering committee), but rather on a model of distributed, iterative expert consultation co-ordinated centrally by the lead organisation. Tangible evidence of this operational model in practice is reflected in the documented formulation of the Stage III workshop methodology: written feedback from expert working groups and peer reviewers reveals multiple iterative rounds of substantive refinement regarding operational details. These ranged from the precise framing of research questions and the selection of participatory moderation techniques to the implementation of explicit time-allocation rules designed to mitigate deliberative capture by dominant participants. This non-hierarchical, documented deliberation between external researchers and process facilitators serves as a prime empirical manifestation of the boundary-spanning mechanisms conceptualised in Chapter 1, demonstrating its viability

as daily administrative practice rather than a mere theoretical ideal⁷⁵.

The synthesis of discrete disciplinary analyses into integrated policy recommendation reports represents a core, deliberately structured function of the Policy Lab. Intermediate deliverables did not take the form of disjointed compilations of independent studies; rather, they were forged through structured cross-sectoral synthesis employing unified analytical matrices that rendered findings across disparate domains directly comparable. This integrative process was reinforced by formalised internal review and quality-assurance protocols, reflecting a level of procedural maturity that transcended the ad hoc informality often characteristic of nascent public sector innovation labs⁷⁶.

⁷⁵ A.H. Krogh, op. cit.; U. Zeigermann, S. Ettelt, *Spanning the boundaries between policy, politics and science to solve wicked problems: policy pilots, deliberation fora and policy labs*, “Sustainability Science” 2023, vol. 18, no. 2, pp. 809–821, <https://doi.org/10.1007/s11625-022-01187-y>

⁷⁶ See A. Whicher, op. cit.; K. Olejniczak, S. Borkowska-Waszak, A. Domaradzka-Widła, Y. Park, *Policy labs: the next frontier of policy design and evaluation?*, “Policy & Politics” 2020, vol. 48, no. 1, pp. 89–110, <https://doi.org/10.1332/030557319x15579230420108>

4.3. Tools and Methods: Planned Design and Operational Reality

4.3.1. Expert Analyses and Their Integration

During the initial phase of expert work, the Policy Lab executed two parallel research tasks. The socio-economic geography team was tasked with identifying European regions undergoing an energy transition towards climate neutrality that exhibited the closest structural correspondence to Eastern Wielkopolska in terms of natural resources, socio-economic profile, industrial base, and territorial scale. As a result, six European Union regions were selected for in-depth comparative analysis, encompassing both Western and Central European cases—a sample that substantially exceeded baseline methodological requirements and underscored the breadth of the expert team's analytical commitment.

Concurrently, the energy systems team identified technological solutions deployed across Europe that aligned with the specific operational objectives of the regional climate strategy. Each solution was evaluated in terms of its feasibility for implementation in Eastern Wielkopolska, applying criteria such as anticipated project duration, socio-economic and environmental benefits, implementation bottlenecks, risk profiles, and reliance on external

dependencies. On the basis of this screening, a portfolio of technologies deemed most viable for regional deployment was established. This diagnostic work also yielded a clear appraisal of the region's comparative strengths—including high stakeholder engagement, scientific and technological capacity in the energy sector, and favourable conditions for organic agriculture—whilst identifying the absence of institutionalised regional revenue streams as the primary structural constraint perpetuating dependence on external grant funding.

The second phase of the investigation shifted the analytical focus from diagnostic identification to policy operationalisation. First, reference regions were selected for detailed case analysis, deliberately prioritising territories with which Eastern Wielkopolska had maintained minimal prior contact to maximise the acquisition of novel institutional insights rather than merely corroborating established knowledge. Subsequently, an analytical matrix was constructed to map the region's core development challenges against the strategic objectives of the adopted climate strategy, which was then deployed to stress-test the contextual transferability of external solutions. Through this matrix, a foundational shortcoming of the existing regional strategy was diagnosed: an excessive concentration on technical and infrastructural dimensions alongside a persistent neglect of social factors, which by contrast

constituted central strategic priorities in the benchmark regions.

Drawing upon this comparative diagnosis, several operationalised, implementation-ready institutional instruments were formulated:

- **Innovation Districts:** Informed by benchmark regional practices and conceptualised as spatial and organisational arenas for quadruple- or quintuple-helix collaboration among academia, enterprise, government, and civil society, designed with a mandatory supralocal remit.
- **Planning Cells (*Planungszellen*):** Adapted from the German civic engagement methodology, wherein a stratified random sample of citizens is temporarily relieved of professional obligations to formulate policy recommendations alongside expert facilitators, functioning as deliberative ‘value consultants’ rather than technical specialists.
- **Umbrella Projects:** Institutional mechanisms designed to lower administrative and financial entry barriers for residents and small and medium-sized enterprises (SMEs) accessing transition funds by positioning the local self-government as the lead intermediary applicant.

Stage II further generated targeted policy recommendations supporting civic participation, SME capacity-building,

green-blue infrastructure deployment, and regenerative tourism, complemented by an indicator dashboard to monitor regional decarbonisation progress.

4.3.2. Participatory Research: Focus Group Interviews and Survey

As a qualitative complement to the expert desk analyses, in-depth focus group interviews (FGIs) were planned with residents of municipalities across Eastern Wielkopolska. These sessions were conducted at the local level by municipal climate advisors acting as moderators, utilizing a standardised research protocol structured around discrete thematic modules: local economic performance and the labour market, awareness and socio-political acceptance of the transition, and perceived quality of life and territorial identity.

To provide quantitative validation, an online survey was administered to regional residents to gather empirical data on public perceptions of the energy transition, civic expectations regarding municipal governance, and the baseline acceptance of planned structural changes. The practical implementation of both tools and a critical appraisal of their procedural limitations are detailed in Subsection 4.5.

4.3.3. Nationwide Student Competition: From Open Format to Direct Commission

The third participatory instrument—distinct in methodological scope from the citizen interviews and survey, and targeted at the national academic community rather than local residents—took the form of a nationwide student competition. Conceived as a two-stage competitive process, it invited interdisciplinary student cohorts to formulate long-term development visions for designated municipalities in Eastern Wielkopolska across social, transport, energy, and economic sectors.

However, the open competition format failed to attract the threshold of submissions required to conduct a competitive assessment under the original procedural rules (the structural causes of which are evaluated in Subsection 4.5). In response, the Policy Lab pivoted from an open competition to a direct commissioning model, formalising an agreement with an interdisciplinary student team to develop a comprehensive sustainable transition plan for the city of Konin.

The resulting study integrated existing local transition assets into a coherent strategic blueprint, yielding one of the most substantively mature deliverables generated across the Policy Lab. Crucially, it introduced an original concept for an *urban innovation centre* functioning as an urban living

laboratory, wherein the municipality's physical infrastructure, public data, and real-world institutional challenges serve as an active testbed for validating solutions that are difficult to pilot in larger metropolitan environments. This procedural sequence—progressing from the failure of an open competition to the substantive success of a direct commission—provides compelling empirical support for the argument that procedural agility and methodological adaptability, rather than rigid adherence to initial project specifications, constitute indispensable preconditions for the efficacy of Policy Lab instruments.

4.3.4. 'Energy of Dialogue' Participatory Workshops

Conceived as a direct operational response to the procedural limitations diagnosed in Subsection 4.5, the 'Energy of Dialogue' (*Energia Dialogu*) participatory workshop framework constituted the methodological core of Stage III of the Policy Lab. The workshop design was structured to fulfil three simultaneous functions:

- **Diagnostic Function:** Investigating community expectations, socio-economic priorities, and anxieties regarding the regional decarbonisation trajectory.
- **Evaluative Function:** Facilitating the collaborative appraisal of policy solutions, institutional instru-

ments, and international best practices identified in preceding project stages.

- **Capacity-Building Function:** Constructing an extensive regional stakeholder map and consolidating local social capital.

The methodological scale and operational professionalism of this instrument marked a qualitative departure from the earlier, underperforming focus group interviews. A coordinated series of county-level (*powiat*) workshops spanning the entire Eastern Wielkopolska territory was designed, incorporating structured modules for diagnosing expectations, assessing public perceptions of transition pathways, thematic deliberative sessions employing a World Café format, and a final synthesis stage with collective prioritisation voting.

The recruitment protocol was calibrated to secure balanced representation across key societal cohorts—including conventional energy-sector employees, local entrepreneurs, agricultural producers, municipal and county officials, non-governmental organisations, and youth representatives. Crucially, the recruitment strategy prioritised engaging demographic groups typically absent from formal public consultation procedures, recognising that these underrepresented voices provide indispensable, grounded perspectives on structural change.

A pivotal institutional innovation introduced in Stage III was the formal differentiation of operational roles within the workshop facilitation team:

- **External Certified Facilitator:** Tasked exclusively with safeguarding the psychological safety of the deliberative space and ensuring procedural parity among participants, deliberately stripped of any substantive expert mandate.
- **Subject-Matter Experts:** Provided specialised technical and socio-economic input strictly on demand, without intervening in the moderation or direction of group discussions.
- **Regional Administration Representative:** Occupied a formal institutional role, elevating the workshop from an academic exercise to an institutional hearing and publicly signalling an administrative commitment to consider the resulting policy inputs.

This functional demarcation represents a direct operationalisation of the ‘dedicated roles’ principle formulated in Chapter 5 as a cornerstone of the ETPL governance model, whilst systematically rectifying the structural design errors identified in Stage II.

4.4. Results and Policy Recommendations: Empirical Deliverables of the Policy Lab

The cumulative output generated across the initial phases of the Policy Lab encompasses systematically documented technological solutions evaluated for regional transferability, fully contextualised European comparative case studies, the operationalised institutional instruments detailed in Subsection 4.3.1, and a comprehensive suite of socio-economic policy recommendations. This substantive corpus substantially exceeded the baseline contractual requirements established at the project's inception, demonstrating the rigorous epistemic commitment of the participating expert networks.

The policy recommendations formulated by the Policy Lab span three distinct tiers of intervention:

- **Systemic Level:** The findings demonstrate the imperative of transitioning from conventional triple-helix arrangements (science–business–government) towards an institutionalised quadruple- or quintuple-helix architecture that integrates civil society as a co-equal partner in transition governance. Furthermore, they emphasize the necessity of coordinating policy interventions across a supralocal territorial scale rather than within fragmented municipal administrative boundaries.

- **Institutional Level:** The primary contribution consists of the operationalised instruments outlined above (Innovation Districts, Planning Cells, and Umbrella Projects), accompanied by a tailored indicator dashboard designed to monitor structural transition dynamics and socio-economic resilience.
- **Technological and Spatial Level:** The recommendations encompass targeted, transferable technological blueprints alongside an integrated long-term spatial and economic development vision for the city of Konin, derived from the academic commissioning initiative.

From the perspective of the Policy Lab's feedback and boundary-spanning mandate, the most significant outcome was that the generated knowledge advanced beyond the cataloguing of external benchmark practices to deliver an evidence-based critical audit of the region's existing climate-neutrality strategy. Specifically, it exposed structural imbalances between technological-infrastructure priorities and social-participatory mechanisms. This diagnostic feedback aligns directly with the scholarship on policy linkages, which underscores the necessity of pre-designed channels for translating experimental findings into binding public policy decisions⁷⁷.

⁷⁷ A.H. Krogh, *op. cit.*

Project documentation confirms that this critical audit provided the institutional impetus required to restructure the participatory architecture in Stage III. Nevertheless, while the formal engagement of regional authorities established an institutional bridge between experimental research and statutory policymaking, the substantive degree to which these recommendations will be integrated into binding regional instruments remains an open empirical question rather than an assured policy outcome.

4.5. Barriers and Operational Setbacks: Critical Reflexivity and Failure Analysis

Drawing upon the scholarly literature on public sector innovation and policy lab failures, this monograph employs a synthetic analytical framework comprising six recurrent, partially overlapping failure categories: *organisational*, *institutional*, *financial*, *political*, *methodological*, and *stakeholder-related*. Rather than positing an immutable universal taxonomy⁷⁸, this typology serves as an analytical diagnostic

⁷⁸ J.M. Lewis, op. cit.; M. McGann et al., op. cit.; A. Stoll, K.C. Andermatt, *Tab the lab: A typology of public sector innovation labs*, “International Review of Administrative Sciences” 2025, vol. 91, no. 1, pp. 93–110, <https://doi.org/10.1177/00208523241280129>; A. Wellstead, S. Giest, I. Mukherjee, et al., *Peak policy lab or chasing windmills? The overlooked issue of misaligned policy design*,

heuristic applied here to three documented operational failures within the participatory component of the Eastern Wielkopolska Policy Lab. Notably, neither financial nor political barriers manifested in this case: the operational timeline and budgetary allocations were strictly maintained, while institutional patronage from regional authorities remained stable. Instead, the operational disruptions that arose were predominantly organisational, methodological, and stakeholder-related—an empirical diagnosis systematically elaborated in Subsection 4.5.4.

4.5.1. The Unexecuted Focus Group Interviews: Role Overload and Conflicting Mandates

Despite the formulation of an exhaustive research protocol and the deployment of initial outreach efforts, the planned municipal focus group interviews (FGIs) were ultimately not conducted. Project monitoring documentation explicitly identifies the core operational constraint: insufficient operational capacity and varying levels of field commitment among municipal climate advisors, driven by limited temporal bandwidth and competing responsibilities across concurrent project work packages.

“Policy Sciences” 2025, vol. 58, no. 2, pp. 267–286, <https://doi.org/10.1007/s11077-025-09577-6>

Interpreted through the analytical typology of barriers, this failure represents the compounding of an *organisational barrier*—specifically, an overextended, poorly demarcated operational remit assigned to a single category of front-line actors—with a *stakeholder-related barrier*, namely the advisors’ lack of real temporal and methodological capacity to assume the demanding, specialised role of qualitative research moderators. This diagnosis is substantively corroborated by the subsequent design of the Stage III ‘Energy of Dialogue’ workshops (Subsection 4.3.4), wherein deliberative moderation was decisively decoupled from municipal advisors and entrusted to external, certified professional facilitators.

4.5.2. Survey Non-Responsiveness: Digital Disintermediation and Methodological Constraints

Notwithstanding structured dissemination efforts, the regional online survey yielded a notably restricted response volume, generating a dataset too small to support robust, statistically representative inferential analyses. Methodological nuance is nevertheless required when evaluating this outcome: while quantitatively constrained, the dataset provided exploratory qualitative insights that corroborated the heterogeneity of public attitudes towards decarbonisation,

serving as supplementary contextual data in subsequent analytical phases of the Policy Lab.

Evaluated against the barrier typology, this shortfall is attributable primarily to a *methodological barrier*—namely, relying exclusively on passive digital dissemination channels without employing targeted response-enhancement techniques (a deliberate methodological choice intended to evaluate spontaneous grassroots civic engagement)—combined with a *stakeholder-related barrier*, characterised by an absence of direct, relational, and personalised outreach mechanisms of the kind subsequently operationalised in the Stage III deliberative workshops.

4.5.3. The Student Competition: The Pitfalls of Academic Mobilisation Without Institutional Anchoring

Despite its conceptually robust design and intellectually rigorous specifications, the nationwide student competition failed to attract the threshold of submissions necessary to execute the evaluative procedure under formal competition rules. The initiative was consequently terminated at the preparatory stage, incurring no ineligible expenditure and generating no adverse spillover effects on concurrent project workstreams.

Through the lens of the barrier taxonomy, this failure reflects a *methodological barrier* inherent in launching an open national competition directed at a geographically dispersed and unanchored student body, compounded by a *stakeholder-related barrier* stemming from insufficient institutional incentives and the absence of established recruitment conduits to reach a specialised target cohort nationally. This underlying pathology—namely, attempting to mobilise an unattached target demographic through a formal, one-off procedural instrument lacking pre-existing institutional networks—mirrors the dynamics observed in both the unexecuted FGIs and the low-response survey, reinforcing the hypothesis of a shared structural denominator examined in Subsection 4.5.4.

Of decisive analytical significance, however, is the coordinating institution's adaptive response to this setback. Rather than reiterating an ineffective open competition or abandoning the participatory stream altogether, the Policy Lab pivoted to a *direct commissioning model*, entering into a targeted contractual engagement with a motivated, identified interdisciplinary student team. This procedural adaptation produced the comprehensive transition blueprint for the city of Konin (Subsection 4.3.3), the substantive depth and spatial sophistication of which far exceeded what would typically emerge from a standard student competition.

This trajectory provides compelling empirical support for the argument that direct commissioning targeting a pre-identified, specialised cohort offers superior operational efficacy when engaging narrow expert niches without pre-established institutional infrastructure, whereas open competitions remain effective only when mobilising broad applicant pools backed by extensive promotional campaigns and substantial lead times.

4.5.4. Structural Interpretation: The Common Denominator of Failures

A comparative appraisal of the three documented operational failures reveals a pervasive structural pathology that transcends the contingency of discrete project events. Across all three instances, the Policy Lab attempted to execute demanding, highly specialised participatory interventions through non-dedicated operational channels—burdening intermediary actors for whom the task represented an auxiliary add-on to existing contractual duties—or via one-off, formalised procedures deployed in the absence of pre-established institutional relationships. This mechanism exemplifies what the public administration and governance literature conceptualises as *role accumulation*: the conflation of multiple, partially conflicting

functions within a single category of actors, systematically compromising the execution of each discrete role.

This diagnostic finding is corroborated by internal reporting from other consortium partners. An identical pattern of overreliance on single-point intermediaries lacking formal institutional anchoring was observed across concurrent project work packages, including green public procurement and territorial climate education. This empirical finding directly informs the foundational design principle formulated in Chapter 5: the mandatory institutionalisation of *dedicated roles* in place of role accumulation. The fact that the Stage III architecture introduced an unambiguous functional demarcation—strictly insulating process moderation from both expert knowledge-brokering and institutional legitimisation—demonstrates that this governance principle was not merely imported deductively from academic literature, but was inductively distilled from the documented operational failures of the project itself.

Furthermore, this trajectory provides empirical confirmation of the broader scholarly thesis that the efficacy of participatory instruments is fundamentally mediated by prevailing local political cultures and pre-existing institutional trust, rather than solely by the technical design of the research tool itself⁷⁹. This insight is particularly salient

⁷⁹ R. Hržica, I. Pluchinotta, P. Kovač et al., *Organizational Readiness for Co-Creation of Public Services in the Central and Eastern European*

within the administrative traditions of Central and Eastern Europe, where organisational readiness and administrative capacity for public service co-creation remain structurally less developed than in Western European contexts.

4.6. Practical Conclusions: From Practice to Model

A critical synthesis of the documented successes and operational setbacks of the Eastern Wielkopolska Policy Lab yields eight generalisable lessons that extend beyond the specificities of the analysed case:

- 1) **Dedicated Versus Accumulated Roles:** Dedicated operational roles execute complex participatory tasks with significantly higher fidelity than conflated roles. A single category of front-line actors cannot concurrently perform technical advisory duties, grassroots community mobilisation, and neutral qualitative research moderation without precipitating a systemic decline in the quality of each function.
- 2) **Independent Deliberative Facilitation:** Professional, certified external facilitation constitutes an indispensable structural prerequisite for safeguarding

Administrative Tradition: Development of the Conceptual Multi-Attribute Decision Support Model, “NISPAcee Journal of Public Administration and Policy” 2021.

the procedural legitimacy and psychological safety of deliberative arenas, rather than an expendable project luxury.

- 3) **Institutional Signalling and Authorisation:** The formal, public presence of high-ranking institutional decision-makers signals to local communities that civic input carries tangible decision-making weight, transforming an academic consultation into an authoritative public hearing.
- 4) **Direct Commissioning Versus Open Competition:** Direct contractual commissioning directed at pre-identified, highly specialised cohorts proves markedly more effective than open competitive procedures when engaging narrow academic or technical niches; conversely, open competitions remain viable only when mobilising broad applicant pools backed by substantial lead times and extensive promotional campaigns.
- 5) **Modular Comparative Instruments as Analytical Heuristics:** Standardised comparative matrices provide high analytical rigour and institutional benchmarking capacity without necessitating cost-intensive primary field research during early diagnostic stages, rendering this approach exceptionally cost-effective for resource-constrained regional policy labs.

6) **Distributed Expert Networks as Scalable Assets:**

A broad, multidisciplinary network of external academic and technical experts functions as a self-sustaining scaling mechanism. Institutional relationships forged during early diagnostic phases can be leveraged directly within subsequent operational stages, thereby lowering the marginal cost of iterative policy design.

7) **Non-Responsiveness as Diagnostic Empirical Data:**

Suboptimal survey response rates and participation deficits should be conceptualised as meaningful empirical data points rather than purely as operational implementation failures. They expose the structural boundaries of civic engagement capacity within specific stakeholder groups and, when systematically analysed, directly dictate the methodological adjustments required for subsequent stages.

8) **Iterative Adaptation as Experimentalist Governance:**

The continuous, reflexive redesign of research methodologies between successive project cycles does not constitute a deviation from a policy lab's core mission, but represents its primary operational *raison d'être*, confirming that the Policy Lab under analysis functioned in practice as an authentic mechanism of experimentalist governance.

The case study of Eastern Wielkopolska provides Chapter 5 with more than an illustrative narrative: it constitutes the primary *empirical genesis* of the generalised model. Consequently, its methodological status is that of an inductive empirical source rather than an independent validation test—a distinction that is foundational to the analytical architecture of this monograph. The operational progression across the Policy Lab's work packages functions as the direct empirical prototype for the sequential Identification–Analysis–Recommendation–Implementation (IARI) cycle proposed in Chapter 5.

Furthermore, the eight practical lessons articulated above translate directly into four of the five foundational principles of the generalised ETPL framework:

- The lessons regarding **dedicated roles** and **independent external facilitation** underpin the principle of *mandatory multi-stakeholder involvement*;
- The imperative of **institutional signalling and administrative presence** informs the principle of *policy linkage*;
- The diagnostic utility of **non-responsiveness as data** alongside **adaptive methodological redesign** substantiates the principle of *iterativity*;
- The insights on **direct commissioning**, **modular comparative heuristics**, and **distributed expert networks** translate into the principle of *adaptability and scalability*.

The fifth foundational principle—*territorial rootedness*—represents a deliberate epistemological exception. It is not inductively abstracted from the empirical mechanics of the Eastern Wielkopolska pilot, but is derived deductively from the theoretical and comparative foundations established in Chapters 1 to 3. The ETPL model is therefore not the product of uncritical single-case induction, which mitigates the risk of tautological reasoning.

While the empirical analysis presented in this chapter elucidates the practical provenance of the model's constituent elements, it does not claim that the model's validity is definitively proven outside the specific empirical conditions from which it emerged. The external validity, generalisability, and operational resilience of the ETPL model in other transition territories remain open empirical questions requiring independent verification in future comparative research.

In sum, the ETPL model elaborated in Chapter 5 does not represent an ex-post theoretical schema superimposed artificially upon the Eastern Wielkopolska pilot; rather, it systematically formalises, refines, and generalises its operational practice. This analytical synthesis relies upon the authors' direct access to primary project documentation, distinguishing this investigation from the secondary comparative literature reviewed in Chapter 3. Integrating practice-based empirical evidence with reflexive theoretical

appraisal reflects established methodological standards in Policy Lab evaluation⁸⁰. Transparently documenting the procedural setbacks of the participatory component is therefore a deliberate methodological commitment designed to ensure scholarly reflexivity, empirical rigour, and epistemic integrity.

⁸⁰ K. Olejniczak et al., op. cit.

CHAPTER V

THE ETPL MODEL: A PROPOSAL FOR A UNIFIED FRAMEWORK

5.1. Foundations of the ETPL Model: Principles and Scope

The Energy Transition Policy Lab (ETPL) is conceptualised as a unified, multi-stakeholder, iterative instrument of experimentalist governance, dedicated to orchestrating the energy transition process within the coal and lignite regions of Central Europe. This definition operationalises the six-dimensional analytical framework established in the public sector innovation literature for categorising and comparing policy labs—encompassing governance and ownership structures, methodological orientation, stakeholder engagement mechanisms, institutional autonomy and boundary-spanning capacity, institutional embedding,

and evaluation metrics—tailoring it to the sector-specific and territorial realities examined in this monograph⁸¹.

The architecture of the model rests upon five foundational principles, each formulated to resolve a specific institutional deficit or structural barrier identified across Chapters 1 and 3:

- **Territorial Rootedness:** The ETPL operates within a defined geographical territory, drawing its operational mandate and procedural legitimacy directly from the local socio-political context rather than functioning as an instrument of centralised, top-down steering. This principle directly counteracts the pathology of ‘pilotism’ diagnosed in Chapter 1, while operationalising the comparative insight established in Chapter 3 that policy transfer across transition regions requires contextualised institutional adaptation rather than uncritical replication.
- **Mandatory Multi-Stakeholder Participation:** The model mandates the formal, institutionalised representation of quadruple-helix actors—public

⁸¹ B. Williamson, *Governing methods: policy innovation labs, design and data science in the digital governance of education*, “Journal of Educational Administration and History” 2015, vol. 47, no. 3, pp. 251–271, <https://doi.org/10.1080/00220620.2015.1038693>; K. Olejniczak et al., op. cit.; H.V. Carstensen, C. Bason, *Powering collaborative policy innovation: Can innovation labs help?*, “Innovation Journal” 2012.

administration, industry, academia, and civil society—across every sequential stage of the policy cycle, rather than confining civic engagement to a post-hoc, consultative phase. This directly addresses the empirical finding substantiated in Chapter 3, wherein nominal stakeholder representation in deliberative bodies fails to secure substantive leverage over ultimate policy decisions.

- **Iterativity:** This principle is embodied in the sequential Identification–Analysis–Recommendation–Implementation (IARI) cycle (elaborated in Subsection 5.2) as an institutional learning mechanism grounded in a Theory of Change architecture. It systematically articulates the causal links between multi-stakeholder engagement, empirical experimentation, reflexive policy learning, and structural policy change⁸².
- **Policy Linkage:** The ETPL establishes a mandatory, pre-designed institutional conduit for translating experimental insights and empirical findings into formal public policy decisions, thereby directly bridging the structural policy gap identified in Chapter 1 through dedicated boundary-spanning mechanisms⁸³.

⁸² S. Plümer, *When does policy learning lead to policy change? Exploring the causal chain from learning to change*, “International Review of Public Policy” 2024, vol. 6, no. 2, pp. 200–219, <https://doi.org/10.4000/138rk>

⁸³ A.H. Krogh, op. cit.

- **Adaptability and Scalability:** The framework is structured to be transferable across heterogeneous regional contexts without sacrificing territorial sensitivity, adhering to the principle of *partial embedding*—defined as an institutional linkage that secures operational alignment with the host public administration while actively preventing bureaucratic capture or loss of experimental autonomy.

The operational scope of the ETPL model encompasses coal- and lignite-dependent regions that are currently in the strategic planning phase or early execution stages of decarbonisation, possess at least a baseline threshold of administrative and institutional capacity within subnational self-government authorities, and have institutional access to an academic or research partner capable of acting as the coordinating anchor entity. The granular boundary conditions governing regional transferability are articulated in detail in Subsection 5.5.

5.2. The IARI Cycle: Process Architecture

At the core of the ETPL framework lies the proprietary IARI cycle, comprising four sequential stages: Identification, Analysis, Recommendation, and Implementation. The process architecture of the cycle is grounded directly in the

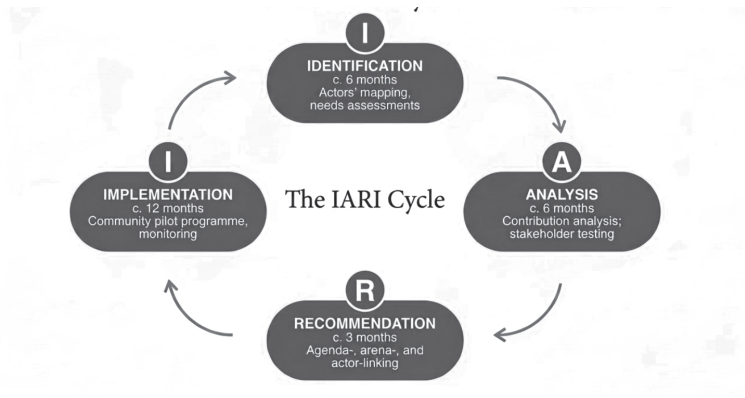


Figure 2. The IARI cycle: process architecture and stage durations of the ETPL model

Source: Author's own elaboration.

logic of the Theory of Change, conceptualised as a dynamic, adaptive framework that articulates hypothetical causal pathways linking stakeholder engagement and empirical experimentation to reflexive policy learning and substantive policy change. Scholarship on urban and regional living labs similarly demonstrates that experimental outcomes are not institutionalised automatically; structured learning pathways are indispensable for translating experimental results into sustained organisational routines and public policy practice⁸⁴.

⁸⁴ S. Hinrichs-Krapels et al., op. cit.; S. Plümer, op. cit.; A. Bhatta, H. Vreugdenhil, J. Slinger, *Harvesting living labs outcomes through learning pathways*, "Current Research in Environmental

The Identification phase, lasting approximately six months, encompasses a comprehensive regional needs assessment, multi-criteria stakeholder mapping, and an initial benchmarking of European best practices. Stakeholder mapping is systematically conducted along the dimensions of influence, interest, and power prior to the commencement of deliberative engagement. This operationalises the methodological recommendation—developed through the Policy Lab’s empirical work—that facilitation must proactively navigate structural power asymmetries by identifying their institutional configuration in advance, rather than managing them reactively during deliberative exchanges.

The Analysis phase, likewise spanning approximately six months, entails an in-depth appraisal of policy transferability, the formal modelling of recommendations, and iterative stress-testing with regional stakeholders. Methodologically, the ETPL model adopts *contribution analysis* as an analytical heuristic to examine whether an observed sequence of changes aligns with a hypothesised causal pathway, rather than attempting to isolate a singular causal effect—a deliberate methodological choice made by the authors. Furthermore, this phase aligns with the policy-learning literature, which demonstrates that durable

and congruent policy transformation requires cognitive beliefs, political preferences, and empirical outcomes to achieve mutual alignment⁸⁵.

The Recommendation phase, projected for approximately three months, culminates in the formulation of a formal policy recommendation document for subnational decision-makers alongside a structured consultation mechanism. It is within this phase that the ETPL model directly resolves the recurring systemic deficit diagnosed in the comparative analysis (Subsection 3.6): namely, the absence of an institutionalised pathway translating participatory deliberation into binding policy decisions. This mechanism relies on three distinct types of policy linkages:

- **Agenda-linking:** Aligning recommendations with prevailing regional political priorities;
- **Arena-linking:** Establishing a formal deliberative forum for presenting and debating proposals with the active participation of subnational authorities and civil society;
- **Actor-linking:** Designating dedicated boundary-spanning brokers tasked with navigating formal decision-making processes⁸⁶.

The **Implementation phase**, lasting approximately twelve months, comprises the micro-scale pilot testing

⁸⁵ Ibid.

⁸⁶ A.H. Krogh, op. cit.

of recommendations, participatory monitoring involving regional residents, and an iterative feedback mechanism that closes the learning loop leading back to the Identification phase of the subsequent cycle. This stage requires pre-designed evaluation indicators (detailed in Subsection 5.6) because, as established in the governance and evaluation literature, monitoring mechanisms lacking ex-ante criteria of success inevitably encounter severe causal attribution deficits, critically undermining the evaluative validity of the model.

The empirical trajectory observed in the Eastern Wielkopolska Policy Lab corresponds precisely to the first two stages of the IARI cycle (detailed in Subsection 4.3). Extending the cycle to incorporate formal Recommendation and Implementation stages is therefore not an artificial departure from existing practice, but rather its organic continuation, directly operationalising those procedural components that have hitherto remained unrealised in the Eastern Wielkopolska case.

5.3. Governance Architecture: Actors, Roles, and Responsibilities

The ETPL consortium model encompasses five discrete categories of actors, each endowed with distinct institutional mandates:

- **Academic/Research Institution (Lead Entity):** A university or independent research centre acting as the coordinating anchor, safeguarding methodological independence, scientific rigour, and institutional continuity;
- **Subnational Self-Government Authority (Institutional Co-Organiser):** Regional or local government authorities functioning as institutional co-organisers and the primary recipients responsible for integrating policy recommendations into statutory planning;
- **Regional Development/Transformation Agency (Operational Partner):** An intermediary agency delivering operational, logistics, and regional networking support;
- **Energy and Industrial Enterprises (Sectoral Partners):** Key economic incumbents and industrial actors providing sectoral insights, technological capacity, and industrial feasibility assessments;
- **Civil Society Organisations and Citizen Representatives (Civic Voice):** Non-governmental organisations,

grassroots community groups, and local residents constituting the quadruple-helix dimension of the governance process.

A central governance innovation formulated within the ETPL framework is the institutionalisation of *dedicated operational roles* as opposed to conflating multiple laboratory functions within the same individuals. This design principle represents an explicit inductive response to the authors' empirical case findings rather than an established universal rule in public sector innovation literature.

The governance scholarship distinguishes four complementary professional profiles within experimental policy arenas:

- The **process facilitator**, tasked with neutral deliberation and psychological safety;
- The **policy designer**, responsible for prototyping and operationalising policy options;
- The **lab manager**, operating as a dedicated *boundary-spanner* navigating the interface between the experimental arena and host public bureaucracies;
- The **knowledge broker**, translating empirical and technical evidence across sectoral silos⁸⁷.

⁸⁷ A. Whicher and P. Świątek, op. cit.; A.H. Krogh, op. cit.; L. Jesacher-Roessler, K. Nessler, C. Schneider, N. Bremm, *Facilitating professional learning networks: the challenging role of hierarchical power structures*, "Journal of Professional Capital and Community" 2025, vol. 11, no. 1, pp. 27–43, <https://doi.org/10.1108/>

While existing literature does not categorically classify role overlap among the most prevalent drivers of policy lab failures, in the empirical case of Eastern Wielkopolska, role accumulation generated unambiguous operational disruptions: the scheduled focus group interviews were aborted precisely because municipal climate advisors, already burdened with existing project work packages, were concurrently assigned the demanding role of qualitative research moderators (Subsection 4.5.1).

Table 5 defines the primary ETPL operational roles alongside their specific institutional mandates and staffing requirements.

Table 5. ETPL operational roles and staffing principles

Role	Primary Function and Mandate	Staffing Principle and Institutional Placement
Facilitator	Moderating deliberative dialogue, managing group dynamics, and actively mitigating structural power asymmetries	External, certified professional; dedicated role strictly decoupled from civil service or public administration positions
Policy Designer	Prototyping policy recommendations, visualising empirical data, and drafting actionable policy options	Core laboratory expert team

jpcc-10-2024-0176; G. Moore, S. Redman, P. Butow, A. Haynes, *Deconstructing knowledge brokering for commissioned rapid reviews: an observational study*, “Health Research Policy and Systems” 2018, vol. 16, no. 1, article 120, <https://doi.org/10.1186/s12961-018-0389-7>.

Role	Primary Function and Mandate	Staffing Principle and Institutional Placement
Lab Manager	Exercising boundary-spanning functions, overseeing strategic project coordination, and liaising with the host bureaucracy	Lead coordinating/operating entity
Knowledge Broker	Synthesising and translating empirical evidence, facilitating cross-sectoral knowledge transfer, and building expert networks	Interdisciplinary expert team or academic research partner
Evaluation Lead	Designing the methodological framework and overseeing the monitoring and evaluation indicator dashboard (Subsection 5.6)	Independent evaluator; strictly autonomous from the operational implementation team

Source: Authors' own elaboration.

The recommended ETPL financial architecture encompasses a hybrid funding model that combines public resource allocations—most notably the Just Transition Fund—with core institutional contributions from the lead research entity and advisory or consulting revenues generated during the subsequent scaling phase. Governance scholarship suggests that such hybrid financial arrangements enhance institutional resilience and operational scalability, provided they are anchored in unambiguous governance structures.

Within publicly financed consortia, steering bodies that integrate formal procedural mechanisms with relational co-ordination tend to outperform governance

models reliant exclusively on informal, inter-organisational trust⁸⁸. Time-limited, project-based grant funding—the dominant operational paradigm within Polish policy lab practice to date, including the Eastern Wielkopolska pilot—inherently generates risks of strategic short-termism and structural power asymmetries. The proposed hybrid model is explicitly designed to mitigate these institutional vulnerabilities, rather than eliminate them automatically.

5.4. Participatory Instruments: A Mixed-Methods Repertoire

The selection of participatory instruments within the ETPL framework is dynamically aligned with each discrete stage of the IARI cycle, rather than deployed as an invariant, static toolkit irrespective of territorial context.

⁸⁸ E.P.M. Croonen, E.K.R.E. Huizingh, *Why not all ‘winners’ are successful: Explaining project performance of publicly funded innovation consortia*, “Technological Forecasting and Social Change” 2025, vol. 216, article 124124, <https://doi.org/10.1016/j.techfore.2025.124124>; A. Whicher, *Evolution of policy labs and use of design for policy in UK government*, “Policy Design and Practice” 2021, vol. 4, no. 2, pp. 252–270, <https://doi.org/10.1080/25741292.2021.1883834>; J.M. Lewis, *The limits of policy labs: characteristics, opportunities and constraints*, “Policy Design and Practice” 2021, vol. 4, no. 2, pp. 242–251, <https://doi.org/10.1080/25741292.2020.1859077>

This approach operationalises the comparative finding that methodological suitability is fundamentally mediated by a region's prevailing political regime and administrative culture: more centralised or low-trust governance environments tend to necessitate formal, evidence-based, and methodologically rigorous analytical instruments, whereas collaborative and high-trust administrative contexts enable deep co-creation, deliberative dialogue, and ethnographic approaches⁸⁹. Table 6 links participatory tools to the four stages of the IARI cycle.

Table 6. Participatory instruments across the IARI cycle

Stage of IARI Cycle	Participatory Instruments and Methods	Conditions for Operational Effectiveness	Primary Risks and Vulnerabilities
Identification	Semi-structured expert interviews, secondary desk research, structured stakeholder mapping	Systematic mapping of power configurations and interest dynamics prior to the initiation of deliberative dialogue	Marginalisation or omission of informal, non-institutionalised actors
Analysis	Co-creation workshops, focus group interviews (FGIs) led by a dedicated external moderator	Professional facilitation strictly independent of regional administrative and political structures	Role accumulation and operational overload resulting from assigning moderation duties to internal project actors

⁸⁹ C. Lee and L. Ma, op. cit.

Stage of IARI Cycle	Participatory Instruments and Methods	Conditions for Operational Effectiveness	Primary Risks and Vulnerabilities
Recommendation	Deliberative citizen panels with institutional representation from subnational authorities and civil society	Procedural transparency and formal public disclosure detailing how stakeholder contributions are incorporated into policy	Tokenistic or merely declarative representation lacking substantive decision-making leverage
Implementation	Municipal-scale pilot projects, participatory civic monitoring, post-implementation evaluation surveys	A visible, institutionalised feedback loop demonstrating the tangible impact of citizen input on policy decisions	Civic disengagement and low participation rates in the absence of dedicated outreach and mobilisation infrastructure

Source: Authors' own elaboration.

When designing ETPL participatory instruments, particular consideration must be given to the methodological trade-off between the closed deliberative roundtable format and the broad public consultation model. The former fosters deliberative depth, relational trust, and constructive consensus-building at the cost of limited demographic reach, whereas the latter secures expansive reach and social diversity at the expense of uneven engagement and the heightened risk of deliberative capture by dominant actors.

Consequently, the ETPL framework prescribes a sequenced, hybrid approach: deploying targeted, small-scale roundtables during the Analysis and Recommendation

phases—where epistemic quality and nuanced deliberation are paramount—supplemented by broad-based public consultation mechanisms during the Implementation phase, where societal reach, civic buy-in, and the territorial legitimacy of pilot interventions are critical.

5.5. Scaling and Interregional Transfer: From Regional Pilot to Nationwide Architecture

The scaling and transfer of the ETPL model from an initial regional pilot to a nationwide governance framework is conceptualised as a structured, three-phase trajectory:

- **Pilot Phase:** Confined to a single territorial jurisdiction and financed via project-based grant funding, corresponding directly to the empirical baseline of Eastern Wielkopolska.
- **Scaling Phase:** Encompassing multiple transition regions and supported through structural instruments such as the Just Transition Fund (JTF) or the National Recovery and Resilience Plan (KPO). This phase requires the operationalisation of an interregional policy-learning network—a governance mechanism demonstrated in the comparative analysis (Chapter 3) to be consistently more effective than the linear, bilateral transfer of discrete policies between regions.

- **Institutionalisation Phase:** Entailing the formal codification of the model within statutory frameworks or regional development programmes, alongside the establishment of a dedicated ETPL Network. Operating as a Central European counterpart to transnational living lab networks, this body functions as an institutional platform for continuous peer exchange, capacity building, and joint impact evaluation.

The baseline boundary conditions governing regional transferability comprise three institutional prerequisites:

- 1) **Subnational Administrative Capacity:** A baseline threshold of administrative and operational capacity within subnational self-government authorities, defined specifically as the organisational ability to coordinate formal deliberative processes and absorb policy recommendations into statutory planning;
- 2) **Academic and Epistemic Anchoring:** The institutional presence of an independent university or research organisation capable of serving as the lead coordinating entity, guaranteeing methodological rigour and experimental autonomy;
- 3) **Strategic Baseline:** The existence of at least a preliminary regional transition strategy or decarbonisation roadmap to serve as an empirical baseline for ETPL policy prototyping.

By analogy with quality-assurance safeguards employed in industrial process management, an operational tool to protect the scaling trajectory against institutional capture by dominant incumbents is the concept of an *implementation readiness checkpoint*. This stage-gate mechanism would formally verify whether a candidate territory satisfies baseline institutional preconditions prior to the launch of each successive transfer phase; however, this procedural concept requires independent empirical validation within the wider scholarship on policy labs and experimentalist governance.

The actionable policy recommendations derived from the ETPL model target three interconnected tiers of multi-level governance⁹⁰:

- **National Government:** Integrating the ETPL framework as an optional yet formally recommended policy-design instrument within central implementation guidelines for Territorial Just Transition Plans (TJTTPs);
- **Regional and Local Authorities:** Developing the baseline administrative infrastructure required to co-manage experimental arenas, including allo-

⁹⁰ A. Tüüç, *The Meta-Mirror: A Sensitization-to-Implementation Readiness Checkpoint for Digitally Supported Continuous Improvement Tool Rollouts in Industrial Manufacturing Contexts*, “Knowledge and Process Management” 2026.

cating dedicated budgetary resources for the role of Lab Manager as a full-time, independent position rather than an auxiliary task assigned to existing civil servants;

- **European Union Institutions:** Exploring the creation of a dedicated funding stream and institutional support framework for the transnational ETPL network within future Multiannual Financial Framework (MFF) programming periods.

5.6. Model Validation Strategy: Designed Methodology and Current Operational Status

The validation strategy for the ETPL model within the scope of this monograph adheres to a two-stage methodological framework, of which only the initial stage has been concluded to date.

- **Stage I (Desk Review and Theoretical Validation):** A comprehensive appraisal assessing the internal consistency and external alignment of the model against the governance literature, regional innovation studies, and relevant European Union policy frameworks—fully executed and detailed across Chapters 1, 3, and 5.

- **Stage II (Expert Delphi Consultation):** A structured Delphi study engaging specialists across energy transitions, regional governance, and public sector innovation, utilising iterative, anonymised feedback rounds to build consensus and prioritise model components requiring refinement. While this stage has been fully operationalised in its research design, as of the monograph's completion date it had not yet been administered to an active expert panel.

Consequently, the validation of the ETPL model remains at this juncture theoretical and comparative in character, rather than fully empirical or confirmed via expert consensus. The selection of the Delphi method for the forthcoming second stage is methodologically substantiated by its documented efficacy in establishing consensus and prioritising policy mechanisms under conditions of structural uncertainty and divergent expert perspectives.

5.6.1. The Five-Level Indicator Framework

The proposed evaluation architecture of the ETPL model is structured around a five-level indicator framework mapped systematically onto the four sequential stages of the IARI cycle:

- **Inputs (Identification Stage):** Tracking the allocation of financial envelopes, dedicated human resources, and the structural composition of the mobilised stakeholder network;
- **Process (Analysis Stage):** Assessing the depth and inclusivity of stakeholder engagement, deliberative parity, and procedural and methodological rigour;
- **Outputs (Recommendation Stage):** Evaluating the delivery of formal policy recommendation documents and their official endorsement by subnational self-government authorities;
- **Outcomes (Implementation Stage):** Capturing intermediate institutional shifts, capacity building, and procedural legitimisation across participating regional bodies;
- **Impacts (Implementation Stage):** Assessing long-term structural changes in regional decarbonisation policy, socio-economic resilience, and territorial transition trajectories.

Establishing causal attribution remains the foremost methodological challenge in validating experimental governance arenas. To address this, the evaluation literature recommends robust methodological triangulation—incorporating process tracing, social network analysis (SNA), and mixed qualitative-quantitative methods—rather than attempting to isolate single, linear causal effects.

A primary limitation of the validation presented in this monograph is the absence of a comprehensive multi-regional field evaluation across a complete, executed IARI cycle: the model has been rigorously validated on theoretical and comparative grounds, but awaits end-to-end empirical testing across multiple territorial jurisdictions. This boundary condition constitutes a clearly demarcated avenue for future empirical investigation, elaborated in the concluding chapter of this monograph.

5.7. Synthesis of the Typology: Summary Map

Throughout this monograph, multiple analytical taxonomies and classification schemes are deployed in parallel, encompassing theoretical frameworks, structural barrier typologies, operational roles, foundational design principles, stakeholder categories, evaluative indicator tiers, and practice-based empirical lessons. Given the conceptual density and multifaceted nature of these classifications, Table 7 synthesises and organises the constituent typologies of the ETPL model according to their respective levels of analysis and operational functions within the wider governance architecture.

Table 7. Synthesis of ETPL typologies by level of analysis and operational function

Level of Analysis	Typology / Framework Component	Number of Elements	Analytical and Operational Function
Theoretical Foundation	Tripartite theoretical framework	3	Conceptualises and explains the underlying governance and behavioural mechanisms driving policy lab operations
Comparative Classification	Multidimensional policy lab framework (literature-derived)	6	Conceptualises and explains the underlying governance and behavioural mechanisms driving policy lab operations
Diagnostic Appraisal	Typology of structural barriers and failure modes	6	Diagnoses the theoretical drivers and empirical causes of operational and participatory failure
Empirical Grounding	Practice-based lessons from regional pilot implementation	8	Serves as the inductive empirical foundation for the formulation of the model's core principles
Normative Standards	Foundational ETPL design principles	5	Establishes the normative, methodological, and procedural core of the unified model
Operational Delivery (Roles)	Competency-based operational roles	5	Structures the institutional division of labour and prevents dysfunctional role accumulation
Operational Delivery (Actors)	Quadruple-helix consortium actor categories	5	Defines the multi-stakeholder institutional composition and collaborative ownership model
Evaluative Measurement	Five-tier evaluation indicator framework	5	Operationalises empirical model validation, process monitoring, and long-term impact tracking

Source: Authors' own elaboration.

A critical appraisal of the synthesis demonstrates that this apparent taxonomic proliferation does not represent an arbitrary accumulation of competing classifications, but rather reflects a structured progression across distinct analytical strata—moving methodologically from theoretical and classificatory foundations, through diagnostic and empirical dimensions, to normative standards, operational delivery, and evaluative measurement.

Nonetheless, this analytical coherence does not diminish the imperative for greater conceptual parsimony. In subsequent iterations of the ETPL framework, careful consideration should be given to consolidating the operational tier, wherein the dual demarcation into competency-based functional roles and institutional actor categories—whilst conceptually substantiated—remains unintegrated within a single, unified mapping matrix.

CONCLUSIONS: SYNTHESIS OF FINDINGS, LIMITATIONS, AND DIRECTIONS FOR FURTHER RESEARCH

This monograph set out to construct and preliminarily validate a unified Policy Lab model tailored specifically to the structural demands of the energy transition across the coal and lignite regions of Central Europe. Across five substantive chapters—spanning the multi-level theoretical foundations, the Polish institutional setting, comparative European empirical evidence, an in-depth primary case study, and the formulation of the original model—this objective has been addressed through rigorous analytical appraisal, identifying both the operational successes of the framework and the empirical boundaries that remain to be verified.

Synthesis of Key Findings: Addressing the Research Questions

RQ1: Sector-Specific Adaptation of Theoretical Frameworks

Chapter 1 demonstrated that no single theoretical paradigm—whether the Multi-Level Perspective (MLP) on socio-technical transitions, the theory of experimentalist governance with boundary-spanning mechanisms, or the literature on professional competencies and organisational roles—can independently explain the operational dynamics of a Policy Lab dedicated to decarbonisation. Only an integrative synthesis of these bodies of literature provides an adequate explanatory framework for deciphering both the successes and structural failures documented in Chapter 4.

The answer to **RQ1** is therefore affirmative, albeit with a crucial conceptual caveat: sector-specific adaptation does not consist in selecting a single, optimal framework, but in deliberately designing a governance architecture that integrates all three analytical tiers—the *systemic* (macro-transition), the *governance* (meso-institutional), and the *competency* (micro-operational) levels—as operationalised within the ETPL model.

RQ2: Governance Architecture, Stakeholder Participation, and Financial Sustainability

The comparative analysis of European case studies (Chapter 3) identified three recurring determinants of institutional success: robust institutional anchoring, adaptive multi-level governance, and interregional learning networks prioritising contextual adaptation over uncritical replication. Crucially, it also exposed a systemic institutional deficit common across even mature cases (such as the German Commission on Growth, Structural Change and Employment or the Austrian Climate and Energy Model Regions): the absence of formalised, institutionalised mechanisms translating participatory deliberation into binding public policy decisions.

Applying these comparative insights to the Polish administrative landscape (Chapter 2) demonstrated that temporal instability in strategic planning horizons, combined with stark disparities in administrative capacity across Territorial Just Transition Plan (TJTP) regions, necessitates a transferable model featuring differentiated baseline entry conditions rather than a static, uniform threshold of institutional readiness.

The primary case study of Eastern Wielkopolska (Chapter 4) tested these propositions empirically against a single, documented baseline: On the one hand, it validated the

indispensable role of **institutional anchoring**, as the Eastern Wielkopolska Policy Lab successfully executed the first two stages of its cycle on schedule, within scope, and within budget. On the other hand, it provided compelling empirical evidence of the core vulnerability diagnosed in Chapter 3: the three documented operational failures of the participatory component stemmed from a shared structural pathology—the **accumulation of conflicting roles** within a single category of intermediary actors—rather than budgetary constraints or lack of civic engagement.

The answer to **RQ2**, formulated cautiously from single-case empirical material, is that the critical mechanisms distinguishing successful experimental arenas relate primarily to the **functional segregation of operational roles** and the formal institutionalisation of **policy linkages**, rather than the sheer volume of financial resources or the technical sophistication of individual participatory instruments.

RQ3: Synthesis into an Operational and Transferable Governance Model

Chapters 4 and 5 address the third research question, constituting the primary original contribution of this monograph. The Energy Transition Policy Lab (ETPL) model synthesises theoretical and comparative insights into

the sequential Identification–Analysis–Recommendation–Implementation (IARI) cycle. The first two stages directly reflect established practice in Eastern Wielkopolska, while the Recommendation stage captures the redesigned third phase of that intervention.

Importantly, the epistemological derivation of the model reverses conventional deductive practice: the IARI cycle was not formulated purely theoretically and subsequently illustrated via a case study, but was inductively abstracted and generalised from the operational reality of the Eastern Wielkopolska pilot. Consequently, the ETPL constitutes a *model derived from a case study* rather than a *model validated by it*.

The answer to **RQ3** is therefore affirmative, but bounded: the operational architecture of the ETPL model has been formally synthesised and is ready for institutional deployment, whereas its formal validation remains at the theoretical, comparative, and partially empirical stage, pending comprehensive, multi-regional field testing across a complete IARI cycle.

Evaluation of the Monograph's Thesis

The thesis formulated in the Introduction—namely, that the Policy Lab, which has hitherto been applied only

fragmentarily, can be transformed into a unified model that enhances the likelihood of translating local experiments into durable, binding regional decisions—finds conditional confirmation in light of Chapters 4 and 5.

It is confirmed, because the principles of dedicated roles, mandatory multi-stakeholder participation, and a formal boundary-spanning mechanism do not represent abstract postulates within the ETPL model; each responds directly to a specifically documented failure or success emerging from its own implementation practice.

It is conditional, because, as the model itself acknowledges in Subsection 5.6, the thesis has to date been verified in only a single region and across an incomplete operational cycle. The proposition regarding the heightened likelihood of enduring policy change remains, in this sense, a well-founded hypothesis, yet one that has not been tested over the full timeframe required to observe the implementation phase and its ultimate outcomes.

The monograph's original contribution is confirmed across the two dimensions set out in the Introduction, to which Chapters 4 and 5 add a third dimension that was not anticipated at the research planning stage. First, the monograph systematises the disparate literature on Policy Labs within the context of coal and lignite regions into a coherent theoretical and comparative framework, firmly grounded in a precisely reconstructed Polish institutional

setting. Second, it proposes an operational model—the ETPL—tested against authentic, long-term implementation experience, thereby distinguishing this work from purely theoretical or purely descriptive studies. Third, the final dimension of this contribution concerns the methodology of the academic narrative itself: the transparency with which the failures of the participatory component of the Eastern Wielkopolska Policy Lab have been addressed constitutes not a compromise on scientific rigour, but rather its direct expression. Most of the available literature on Policy Labs examines initiatives externally, without access to internal project documentation, and consequently systematically underestimates both the frequency and the structural nature of operational failures.

Limitations of the Study

Academic integrity requires a clear and transparent articulation of the limitations inherent in the adopted research design—certain of which were acknowledged in the Introduction, whilst others became apparent during the synthesis of Chapters 4 and 5.

The first limitation in Single-Region Verification and an Incomplete Operational Cycle. The ETPL model was empirically verified within a single territorial jurisdiction

and across an incomplete cycle. Specifically, the first two stages of the IARI cycle were executed in full, whereas the third stage (Recommendation) was elaborated as a fully designed intervention that had not yet been deployed in the field as of the monograph's completion date. The fourth stage (Implementation) remains entirely unexecuted in practice, meaning that the proposed outcome and impact indicators remain theoretical constructs that have not yet been empirically observed.

The second limitation is Case-Selection Parameters in the Comparative Analysis. The selection of cases in Chapter 3 was guided primarily by source accessibility and empirical availability rather than systematic or statistical representativeness. The final comparative sample comprises seven primary European reference regions and two supplementary European territories (yielding nine mapped reference cases, A–I), one non-European counterpoint (Canada), and the discrete Eastern Wielkopolska Policy Lab case study (Case J). Consequently, whilst the comparative conclusions are rigorously grounded within the scope of the examined material, they do not constitute an exhaustive mapping of all European initiatives of this type.

A third limitation is Temporal Instability of Contextual and Regulatory Data. The institutional analysis in Chapter 2 reflects the state of Polish energy governance at the time of writing. However, the strategic update of the Energy

Policy of Poland until 2040 (PEP2040) remains underway, and the revision of the National Recovery and Resilience Plan (KPO) scheduled for 2026 may alter funding allocations and statutory priorities for coal-mining regions in ways that were unforeseeable at the point of finalizing the manuscript.

The fourth limitation is Unadministered Status of the Delphi Expert Validation. Although the validation questionnaire was fully designed as an operational research instrument, it had not yet been administered to an active expert panel at the time this monograph went to press. The validation of the ETPL model therefore remains confined to desk reviews, conceptual triangulation, and alignment with the established literature, lacking at this juncture the empirical corroboration of structured expert consensus.

Directions for Future Research

The limitations identified above point directly to four distinct avenues for further research, sequenced from the immediate continuation of current empirical work to a broader, long-term research programme:

- **Completion and Evaluation of the Full IARI Cycle in Eastern Wielkopolska:** The most direct continuation involves observing, documenting, and evaluating the

redesigned ‘Energy of Dialogue’ deliberative workshops and the subsequent Implementation phase, alongside the empirical tracking of outcome and impact indicators. This would achieve the end-to-end execution of a complete IARI cycle within a single territorial jurisdiction for the first time, thereby empirically—rather than merely theoretically—testing the operational feedback loop linking the Implementation stage back to subsequent Identification rounds.

- **Pilot Replication in a Contextually Differentiated Transition Region:** As established in Chapter 2, Polish TJTP regions exhibit marked disparities in institutional capacity, with Eastern Wielkopolska representing a comparatively mature administrative environment. Piloting the ETPL model in a coal-mining territory characterised by lower baseline administrative capacity would enable rigorous empirical verification of the boundary conditions governing transferability, as well as testing the operational efficacy of the proposed *implementation readiness checkpoints*.
- **Operationalisation of the Expert Delphi Consultation:** Administering the fully designed validation instrument to an active panel of specialists in regional governance, energy transitions, and public sector innovation represents the most direct pathway to ele-

vating the model's validation from a desk-based literature review to documented expert consensus, without awaiting the completion of multi-year field trials.

- **Longitudinal Investigation of Systemic Effects:** Extending beyond the immediate temporal horizon of this study, the most ambitious and valuable research avenue entails a longitudinal appraisal of the systemic impacts of the ETPL model over a five-to ten-year period. Such an inquiry must examine not only whether experimental recommendations achieve formal policy codification, but whether they translate into tangible, measurable shifts in territorial transition indicators. Deploying the methodological triangulation outlined in Subsection 5.6 provides the necessary empirical rigour to address the challenge of causal attribution, which—as demonstrated in Chapter 1—remains the foremost unresolved methodological problem across the wider policy lab literature.

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