Appendix to the Book chapter "Building back better? Reviewing scenarios of a decentralised post-war electricity system in Ukraine"

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Appendix A

Table A1: Indicator scoring system (criteria for qualitative analysis)

Score	Definition	Description	Criteria
1	**Very weak** (little to no presence of Indicator)	The policy document shows little to no evidence of the indicator being present. If the indicator is mentioned, it is done so minimally or superficially, without substantive detail or actionable measures. For instance, the notion of "sustainability" is mentioned in a broad, vague context without outlining specific goals, actions, or commitments.	-Indicator is barely mentioned or completely absent. -No specific actions, measures, or guidelines related to the indicator. -Very vague or general statements without any detailed explanation. -No evidence of commitment whatsoever.
2	**Weak** (limited presence of Indicator)	The document includes the indicator but in a limited way. References are more than superficial but lack depth, clarity, and specificity. For instance, a document includes a sub-section on "sustainability" with generic goals, but lacks detailed plans or timelines for achieving them	-Indicator is mentioned but it is not the central focus. -Few specific actions or measures; details are sparse. -General, broad goals without clear implementation strategies. -Some recognition of the indicator, but low level of commitment.
3	**Moderate** (moderate	The document provides a moderate level of detail and commitment to the indicator. There are some mentions	-Indicator is clearly mentioned and somewhat detailed.

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	presence of Indicator)	and actionable measures, but these are cursory and lack full integration, comprehensiveness, and robustness. For instance, a document outlines several sustainability goals with some actions and timelines but lacks comprehensive integration across all sections (i.e., no strategic roadmap).	-Several specific actions or measures are outlined. -Goals and actions are clear but not comprehensively integrated. -Evidence of commitment, but some areas may lack depth.
4	**Strong** (substantial presence of Indicator)	The document strongly incorporates the indicator with detailed and specific actions, goals, and/or measures. The indicator is integrated into multiple aspects of the document. For instance, the document develops a detailed action plan on how to realize specific sustainability targets through concrete actions, timelines, and measurable goals.	-Indicator is a significant focus of the document. -Detailed and specific actions, measures, and goals. -Integration of the indicator across multiple policy sections. -Clear evidence of commitment and advocacy
5	**Very strong** (comprehensive presence of Indicator)	The document comprehensively incorporates the indicator with extensive detail, clarity, and specificity. The indicator is a central theme and is thoroughly integrated with actionable measures and clear, measurable outcomes. For instance, a document thoroughly embeds measurable sustainability targets into an implementation framework or strategic roadmap with extensive and detailed plans, concrete actions, measurable goals, delimited timelines, and evaluation criteria.	-Indicator is a central, pervasive theme throughout the document. -Extensive detail and specificity in actions, measures, and goals. -Thorough integration across all aspects of the policy. -Strong, clear evidence of commitment to the indicator, implementation, and evaluation.

To establish a measurable assessment of the presence and strength of qualitative indicators on electricity system decentralisation in policy documents, this scoring protocol outlines clear and consistent criteria to help determine specific indicator scores from 1 to 5. To this aim, we define each score level and outline its characteristics, using examples to illustrate how a policy document might be examined in terms of the extent of energy system decentralisation it promotes/endorses across our two core dimensions of a) technological decentralization and b)organizational decentralization. In doing so, this scoring protocol supports a systematic and replicable approach for the quantification of qualitative data, ultimately contributing to the reliability, consistency, and validity of our analysis.

Appendix B

Table B1: Technology-specific decentralization factors
(Source: own classification based on UBA 2024 for German power plants)

Type of power plant	Average installed capacity [MW]	Decentralization factor
Biomass	157.3	1.0
Lignite	639.3	0.0
Hard Coal	460.0	0.4
Gas	270.8	0.8
Hydro	192.5	0.9
Offshore Wind	303.9	0.7
Onshore Wind*	157.2	1.0
PV*	189.0	1.0
Nuclear	N/A	0
Coal	Average of lignite and hard coal	0.2
Run of River	N/A	0.9
Hydro Reservoir	N/A	0.2
Other RES	Mix of Biomass and Geothermal	0.9

*) The UBA database only includes power plants above 100 MW capacity. As many onshore wind farms and a large share of solar PV projects are smaller than that, their decentralization factor was corrected upwards to 1.0.

Shares of wind power for scenarios which did not explicitly distinguish them: 80% onshore, 20% offshore (Source: WindEurope 2024)

Shares of hydro power for scenarios which did not explicitly distinguish them: 5% run-of-river, 95% reservoir (Source: REKK, Dixi et al. 2024)