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RESILIENCE ARBITRAGE: DESIGNING SANDBOXES FOR ACCELERATED CLIMATE-TECH DEPLOYMENT

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The term *innovation arbitrage* – popularized in technology policy to describe innovators relocating to more permissive jurisdictions (Thierer, 2016) – is here extended into the climate and clean energy domain through the introduction of *resilience arbitrage*. This framing was first introduced in Daviy (2025) at the Sustainable Energy Forum (SEF), Kyiv. I define resilience arbitrage as the strategic deployment of frontier technologies and startups into **sandboxes of resilience** – high-need, high-opportunity environments – where acute disruption, urgent demand, and supportive policy create conditions for accelerated piloting, scaling, and refinement.Unlike regulatory sandboxes – temporary policy carve-outs created by regulators – sandboxes of resilience emerge organically in fragile or crisis-affected contexts as real-world testbeds of adaptive capacity, where resilience arbitrage leverages asymmetries in adaptive capacity to transform crisis, constraint, or structural underdevelopment into platforms for accelerated innovation.

This framing extends earlier theories of strategic opportunity under incomplete markets (Denrell et al., 2003) and complements the literature on leapfrogging in energy and infrastructure transitions (Zanello et al., 2016; Zaman, 2020). Case evidence from frontier markets underscores this potential. Solar microgrids have provided life-saving energy in Ukrainian hospitals and communities during wartime grid collapse, when diesel generators failed (SolarPower Europe, 2023; Microgrid Knowledge, 2023; Booth et al., 2019). Hybrid renewable systems combining solar, wind, and storage have been validated as technically robust and adaptable in extreme operating conditions (Xu et al., 2019; Adewole et al., 2023). Insights from knowledge arbitrage research (Nawaz et al., 2024) suggest further pathways by which startups can translate fragility into adaptive capacity. Case evidence suggests that piloting

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in frontier environments not only lowers cost and time-to-market but also expands systemic resilience.

This paper contributes to the literatures on innovation arbitrage, technological leapfrogging, and resilience by introducing a framework for resilience arbitrage that integrates site identification, regulatory experimentation, capital mobilization, and cross-sector partnerships. By naming and theorizing this mechanism, it establishes both a conceptual foundation for scholarly debate and a practical strategy for accelerating climate technology deployment in fragile and high-need geographies.

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