

Policy Brief: Leading the "Build Back Better" Strategy

Transitioning from Fragmented Reconstruction to Systemic Urban Resilience

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1. Executive Summary

Current urban recovery efforts globally are often stifled by a "rebuild what was lost" mentality, which inadvertently restores the same structural and systemic vulnerabilities that led to the initial crisis. For instance, in many flood-prone regions, reconstruction often ignores altered hydrological patterns, leading to repeated disaster cycles. This policy brief advocates for the "Build Back Better" (BBB) strategy, a philosophy that treats recovery as an opportunity for systemic improvement rather than mere restoration.

By adopting the 5-DERM Model and integrating nature-based solutions (NBS), governments can turn disaster risk reduction into a proactive driver for economic and social growth. Crucially, this framework recognizes architects and planners as key agents of systemic change, serving as the visionary bridge between technical standards and community resilience rather than just technical contributors. This brief outlines a transition toward resilient, adaptive, and inclusive urban systems aligned with the SDGs.

2. Context and Problem Statement

To achieve true resilience, urban recovery must move beyond isolated repairs and address the underlying sustainability gaps that traditional models ignore.

2.1 The Failure of Fragmented Recovery

Traditional reconstruction models frequently fail because they operate in silos:

1. Sectoral Silos (Environmental): Energy and water systems operate in isolation.
2. The Functionality Gap (Social): Physical structures are rebuilt without restoring social institutions.
3. Short-Termism (Economic): Efforts focus on immediate relief rather than long-term resilience.
4. Missed Opportunities (Systemic): Root causes of vulnerability remain unaddressed.

2.2 The Degradation of Regulating Services

A central driver of urban disaster is the loss of "regulating services"—the natural processes, such as flood control, water filtration, and carbon sequestration, that ecosystems provide to maintain environmental balance. Rapid urbanization severely degrades these services.

- Case Evidence (Kuala Lumpur): Between 1990 and 2021, urban forest cover dropped from 50% to 8%, escalating flash flood hazards even during moderate rainfall.

3. Proposed Framework: The 5-DERM Model

The 5-DERM model provides a multidimensional framework to ensure recovery is holistic and aligned with the SDGs. By integrating these five pillars, the model supports integrated decision-making, allowing planners to evaluate how a digital intervention (like a sensor) impacts environmental health and socio-economic stability simultaneously.

- Digital: AI and environmental data monitoring (e.g., satellite imagery).
- Socio-Economic: Restoring local economies and social cohesion.
- Environmental: Mandating climate-responsive design and nature-based solutions.
- Institutional: Strengthening local governance and community ownership.
- Urban Recovery: Addressing the city's physical needs as an interconnected organism.

4. Action-Oriented Policy Recommendations

The following implementation-focused actions provide a pathway from theoretical resilience to practical urban transformation.

4.1 Mandate Data-Driven Environmental Monitoring

- Action: Adopt the Normalized Difference Water Index (NDWI) to map shifting water patterns and provide early warning signals before disasters occur.

4.2 Embed Sustainability in the Design Process

- Action: Update planning codes to mandate passive design strategies (e.g., natural ventilation, thermal comfort). These are not modern luxuries but climate-responsive traditions rooted in regional and vernacular architecture.
- Action: Prioritize local building materials and transition architects to "community developers" who involve residents in construction.

4.3 Adopt "Composability" for Resilient Housing

- Action: Support modular "alphabet" architecture that can be scaled from individual shelters to entire neighborhoods.
- Action: Use Origami-inspired (Yoshimura pattern) solutions for displacement crises. These systems must be culturally adapted to match local social contexts and regional aesthetics to ensure long-term dignity.

4.4 Incentivize "Live Battery" Infrastructure

- Action: Pilot to Scale: Transition from small-scale pilot projects to large-scale implementation of fog nets for water harvesting (25 gallons/day) and "porous" urban designs. This allows policymakers to assess feasibility before city-wide mandates.

5. Implementation: The Path Forward

The transition to practice requires robust evaluation:

- Sustainability Checklists: Implement checklists across all project phases (design to construction). These must be explicitly linked to monitoring and long-term performance assessment mechanisms to ensure alignment with SDG 11 and 13.
- Participatory Governance: Foster co-production between national, city, and community levels.

6. Conclusion: From Recovery to Transformation

Resilience is an economic driver for future development. Architects and planners must embrace their roles as long-term stewards of these resilient urban systems. By integrating Digital Twin technologies and the 5-DERM model, we do not just recover cities—we transform them into sustainable environments capable of thriving in an uncertain future.