

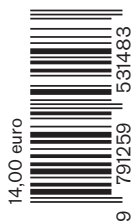


Edited by Urbicide Task Force

Proactive Reconstruction

Quaderni luav. Ricerche

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In the field of urban reconstruction, there is an urgent need to address pragmatic issues such as employment creation, design flow coordination, adaptation mechanisms, urban form control, prototyping design, and concept visualization, going beyond the geopolitical, societal, urban, and architectural debate that concerns the current post-war situations. The proposed strategy incorporates all these aspects, attempting to lay the foundations for a lasting peace.



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Quaderni luav. Ricerche *luav at Work*

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Urbicide Task Force is a research team based at Università luav di Venezia. Our mission is to provide a non-partisan, open, and collaborative platform for design, knowledge sharing, and capacity building related to reconstruction strategies. www.urbicidetaskforce.iuav.it.



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The post-conflict and post-disaster reconstruction process is only partially regulated by international organizations; phases such as the response to emergency conditions, damage assessment, or distribution of humanitarian aid are addressed by specific institutions with clearly identified objectives. This is the case of the UN OCHA Office for the Coordination of Humanitarian Affairs, which was created in 1991 to provide more effective and rapid intervention during humanitarian crises and coordinate UN agencies during disasters to provide a homogeneous response to emergencies. However, prolonging emergencies in early recovery and reconstruction phases leads to further coordination problems as it is unclear who among the various international organizations and local administrative levels should be responsible for managing the process. It is a huge challenge that has been faced by the United Nations through the definition and implementation of the cluster approach

used for coordinating in non-refugee humanitarian emergencies. Humanitarian organisations have agreed to lead certain clusters at global level, and have defined a cluster structure for non-refugee humanitarian responses at country level [...]. The cluster system spreads accountability for the delivery of services (health, shelter, etc.) across different cluster lead agencies, so that no single agency is accountable for the entire response. [...]. Clusters are groups of humanitarian UN and non-UN organizations in each of the main sectors of humanitarian action (water, health, shelter, logistics, etc.). [...] Their aim is to build the capacity of the national systems to respond to humanitarian situations with a protection and accountability lens and progressively hand over coordination to national and local entities.¹

Design Flow. A Framework for Locally-led Post-conflict Reconstruction

¹ For a full explanation of the Cluster Approach see the UNHCR, *United Nations High Commissioner for Refugees Emergency Handbook*. UNHCR, *Cluster Approach*, 20 November 2023, available online (www.emergency.unhcr.org/print/pdf/node/565).

However, the cluster approach has not allowed for full control of the reconstruction process since it has major problems controlling the necessary evolution of urban patterns in different phases.

Current Organizations and Criticalities

Post-disaster experts have proposed various subdivisions into phases of the complex emergency process following extreme events². This can be roughly summarized in a circular process consisting of four phases: mitigation, action taken to prevent or reduce the cause, impact, and consequences of disasters; preparedness, planning, training, and educational activities for events that cannot be mitigated; response, operations conducted in the immediate aftermath of a disaster to quickly ensure safety and well-being; and recovery, restoration, efforts that ensure a return to a stable condition. The four phases are seen as segments of a cycle where the return period of each event dictates the general time frame that is then subdivided into significantly different intervals ranging from the continuous work of mitigation to the shortest possible duration of immediate response. In the current emergency response paradigm, urban designers participate in all the phases but are more involved in the mitigation and recovery actions. In mitigation, they are called to anticipate and ensure the resilience of the built environment in the face of multiple pressures, while in recovery, they are required to provide spatial solutions that can restore the state of dynamic equilibrium. Post-disaster frameworks can be partially adapted to conflicts and social and economic risks. Still, some differences emerge in the capacity of the local communities to participate actively in the process. While

2 United Nations Office for Disaster Risk Reduction (UNDRR), *Yokohama Strategy and Plan of Action for a Safer World: Guidelines to Natural Disaster Prevention, Preparedness and Mitigation*, UNDRR, Genève 1994. UNDRR, *Sendai Framework for Disaster Risk Reduction 2015-2030*, UNDRR, Genève 2015. UNDRR, *UN Global Assessment Report on Disaster Risk Reduction (GAR)*, UNDRR, 2019. United Nations, *Joint Recovery and Peace-building Assessments (RPBAs): A Practical Note to Assessment and Planning*, UN, New York 2008. Federal Emergency Management Agency (FEMA), *Four Phases of Emergency Management*, FEMA, Washington DC 2020.

natural disasters tend to strengthen community bonds, wars act in precisely the opposite way by fracturing societies and generating dangerous grievances that can lead to conflict recurrence³.

If we observe the reconstruction process as a continuous control of the evolution of the urban form over time, then we must necessarily build a feedback mechanism so that the choices made in the emergency phases are immediately inserted into more complex reasoning that influences all subsequent phases. Simply put, the issue of the location of residences and emergency services cannot fail to take into account the process of progressive hardening of the urban form, considering that previous studies⁴ clearly show how the emergency condition tends to become permanent. Building a transition process that sees some fixed elements around which to evolve an urban fabric with previously identified parameters over time and space becomes an exercise in process planning that brings into play different scales and multiple professional skills in addition to a multitude of designers called to operate within a shared conceptual and operational framework. In order to achieve this objective, it is necessary to define an overall design flow of all the required interventions that is configured as a Gantt chart with the three intervention times on the abscissas (early recovery, reconstruction, development) and the actions divided by themes on the ordinates (debris, energy, water/sanitation, infrastructure, public services, factory, housing, community, food, economy/employment and land management). The Gantt chart facilitates the identification of the preferential order of interventions and,

3 J. Vaughn, *Community Development in a Post-Conflict Context: Fracture and Depleted Social Capital*, «Community Development Journal», 46(1), 2011, pp. 51-65. D. Aldrich, *Ties that Bond, Ties that Build: Social Capital and Governments in Post Disaster Recovery*, «Studies in Emergent Order», 4, 2011, pp. 58-68. L. Ireni-Saban, *Challenging Disaster Administration: Toward Community-Based Disaster Resilience*, «Administration & Society», 45 (6), 2012, pp. 651-73.

4 M. Agier, *Managing the Undesirables: Refugee Camps and Humanitarian Government*, Polity Press, Cambridge 2011. B. Yassine, H. Al-Harithy, C. Boano, *Refugees Hosting Other Refugees: Endurance and Maintenance of Care in Ouzaii (Lebanon)*, «Journal of Refugee Studies», 34 (3), 2021.

most crucially, establishes a system of relations and relationships between the various actions. The proposed strategy challenges the division into phases by defining a system that, rather than working in a cycle, tends toward a linear modification of the built environment, aiming at the definition of urban spaces that are different from the ones that have witnessed and often favored, the impact of the extreme event. The *Build Back Better* paradigm – defined as the use of the recovery re-habilitation and reconstruction phases after a disaster to increase the resilience of nations and communities through integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems, and into the revitalization of livelihoods, economies, and the environment⁵ – must be criticized in terms of urban vision since it denies any chance for a radical modification of the urban environment. The critical issue of modifying the profound settlement principles of urban patterns in order to make them resilient to major pressures cannot be achieved by a strategy that is deliberately aimed at the restoration and amelioration of a pre-event condition.

The bottom-up cellular strategy, applied through laboratories of reconstruction, is instead aimed at the definition of a new urban pattern that analyses and considers the existing conditions but, at the same time, is not blind to their critical repetition. In this vision, reconstruction does not necessarily imply restoring the existing urban form, which often lacks urban qualities and technological performance, but only the search for a dynamic equilibrium capable of providing local communities with safe and qualitative urban spaces. The strategy reaffirms the necessity for preparedness and response but sees mitigation and recovery as a single element directed at modifying the urban form and varying only in intensity. Once the alternative urban model has been defined, mitigation becomes a slow process of transformation, while recovery – or, for a better definition, reconstruction – is only to be intended as the extraordinary chance, applied in

5 United Nations General Assembly (UNGA), *Report of the Open-Ended Intergovernmental Expert 2 Working Group on Indicators and Terminology Relating to Disaster Risk Reduction*, UN, New York 2016.

extreme situations, to significantly increase the speed of intervention and the pace of metamorphosis.

Design Flow: a Proposal

In order to ensure a locally-led planning process, engagement and consultation with key national and local partners will be critical. Transforming a general strategy into an actionable plan for the reconstruction of a sustainable built environment requires close coordination among all relevant stakeholders. It is fundamental to define a design flow that outlines all necessary actions across early recovery and reconstruction stages and, ultimately, the development pathway and their interaction mechanism:

An overall strategy defined with national and local partners, outlining the desired urban model and the required design, implementation, and coordination mechanisms;

A phased approach to connect the humanitarian phase to early recovery and reconstruction. The inception phase starts with transitional shelter solutions under the umbrella of portico roofing systems that can provide dignified and community-based preliminary housing while paving the way for longer-term recovery solutions.

The design flow is based on a series of interlinked pillars that clearly identify the main thematic fields and elements under the integrated urban recovery strategy. Each pillar is characterized by a series of essential actions to be implemented in close connection with and contributing to the other pillars. The flow can be used by different groups of experts, each in charge of a specific part of the reconstruction efforts. Ideally, these groups can be subdivided at the neighborhood (or cell) level and operate in strict collaboration with local communities. To facilitate this approach, a series of reconstruction laboratories can be established to design and refine single urban cells or draw on the expertise of specialists aligned with each pillar. This open framework fosters collaboration, community participation, and responsiveness to local needs within an adaptable regulatory system, guiding and regulating urban transformations as the strategy's core objective.

The design flow allows the collection and support of the needs and aspirations of local communities while operating in a clear

but open regulatory framework. It is intended to be the process that allows the control of urban metamorphoses, which remains the central goal of the overall strategy. The evolution of the urban environment responds to an extensive series of inputs: availability of financial resources and construction materials, desires of the local community, the possibility of finding skilled local labor and generating positive incomes and employment opportunities. The goal is not to define a specific final configuration of each cell/neighborhood but rather to control the multiple forces that shape each cell, ensuring that design decisions lead to the construction of a sustainable urban environment matching together quantitative performances and qualitative spaces.

Pillars and Action: a Blueprint

In the Gaza example, the design flow is structured on the basis of eleven interconnected pillars which outline the main thematic areas and building blocks of the reconstruction strategy and are characterized by a set of essential actions that can be resumed as follows:

Debris and rubble removal and reuse. The strategy recommends the initiation and scale-up of a comprehensive labor-intensive debris clearing and recycling program, with safety at its core. This will provide emergency employment as well as opportunities to recover and recycle many valuable materials, resulting in long-term sustainable solutions. Employment can be considered a key element in the whole process of removal and reuse.

Energy. Strategy is committed to integrating renewable energy and ICT-based solutions for the restoration of critical services and utilities. Given the extensive destruction of critical infrastructure, the strategy will explore innovative approaches to enhance access to energy. The program will also emphasize resource diversification for restoring energy access, considering waste as a resource, and integrating solar energy across all interventions to enhance resilience. The proposed intervention will focus on securing an immediate power resource for critical water and health facilities through the implementation of the following activities: supply diesel generators and emergency fuel (offshore power ships); supply and install mobile solar PV systems; rehabilitation of medium and low voltage network.

Water/Sanitation. This program aims to promptly increase access to improved emergency water supply by addressing the following priority needs: desalination for emergency water supply. Installation and operation of medium-scale off-grid solar-powered mobilized desalination units to provide emergency drinking water. Restoration of municipal infrastructure and capacities. Restoration of bulk water supply – municipal water wells, main transmission pipelines, maintenance equipment, and spare parts – capacities to respond to the damage of sanitary infrastructure.

Infrastructures. The opportunity to rebuild new infrastructures (which probably were further compromised following the conflict) allows us to fill the technological gap and make an important leap in terms of quality. The strategy entails the construction of new connecting roads to integrate emerging urban centers, promoting intelligent and sustainable mobility solutions to enhance road safety and air quality, and pedestrianizing urban areas to foster higher-density development, reduce reliance on motorized transport, and strengthen community interactions.

Public Services. The strategy focuses on rehabilitating and reconstructing essential public and social infrastructure, particularly education and healthcare facilities, which have been severely damaged or destroyed due to conflict. It aims to restore service delivery through integrating Mental Health and Psychosocial Support (MHPSS), deploying renewable energy solutions, and providing essential medical equipment and supplies. A comprehensive infrastructure damage assessment will guide the prioritization of affected neighborhoods. The reconstruction process presents an opportunity to restore and enhance urban liveability and social infrastructure, strengthening healthcare and education systems in war-affected communities.

Factory. The establishment of on-site production facilities is a key element in the overall reconstruction process, providing valuable employment opportunities for the local workforce. Three main production lines are planned: light structural elements manufactured through pultrusion, bricks and other components made from reused rubble, and materials derived from agricultural products. Industrial zones serve as strategic entry points. This includes

investments in restoring and enhancing productive capacities, upgrading infrastructure, and introducing innovative, green solutions to achieve resource-efficient production.

Housing. The reconstruction strategy is based on the assumption that settlements will begin in areas that are free of rubble and easily accessible by safe roads. In this way, the construction of housing for displaced people is brought forward without having to wait for the completion of the rubble removal and disposal process.

Community. The process highlights the opportunity to reconstruct not only the urban fabric but also the social one, giving space to the immaterial dimension of the equation and recognizing the community's essential role in the recovery and promotion of social cohesion. Community resilience, local knowledge, and the propensity of people to collaborate and cooperate can help to proceed more quickly in reconstruction. Our approach integrates strategies that go beyond mere survival, emphasizing dignity and community engagement, rebuilding social networks, and creating sustainable structures for the eventual return to "normalcy." The goal is not only to rebuild what was lost but to envision and construct thriving cities and communities that embody inclusivity, sustainability, and social harmony.

Food. Strengthening local agricultural production provides fundamental job opportunities and economic reactivation in all reconstruction phases. The strategy focuses on revitalizing the agricultural sector through rubble removal, greenhouse construction, and advanced irrigation techniques to optimize food production and water efficiency while promoting a circular economy by repurposing agricultural waste into sustainable building materials.

*Economy/Employment*⁶. The strategy's main objectives is to lower unemployment rates as early as the Early Recovery phase by reactivating production chains and launching vocational courses to train workers active in the reconstruction process. The strategy adopts a comprehensive approach to economic recovery, focusing on empowering SMEs, fostering an enabling business environment,

6 For a more in-depth look at the employment subject, we recommend the contribution written by Fantin and Vendemini in the same volume.

leveraging digital technology, and promoting private sector resilience through strategic partnerships, financial access, and market integration. The plan aims to enhance economic self-reliance, facilitate trade and investment, support innovation to drive sustainable growth, ultimately fostering a resilient and competitive economy.

Core government function and land management. Massive destruction can lead to land speculation due to the collapse of real estate values, as well as to the growth of informal settlements and housing poverty. To mitigate these phenomena a swift and effective reconstruction process is essential, although it is often hindered by fragmented land ownership. The proposed strategy seeks to address these challenges by establishing a Public Agency responsible for managing land consolidation processes and controlling reconstruction costs. This strategy follows a phased and integrated approach to restoring core government functions and essential services, addressing immediate needs while strengthening resilience, governance, and long-term development. Key initiatives include rebuilding service delivery infrastructure, enhancing e-government capabilities, ensuring public sector financial sustainability, harmonizing legal frameworks, and promoting democratic governance and political participation.

Interaction Mechanisms

In post-emergency planning and urban reconstruction, the temporal management of project actions is central to ensuring a coherent and effective development process. The design flow represents a fundamental methodological tool for modeling the interdependencies between events and project phases, allowing the optimization of the temporal sequence of actions and maximizing the effectiveness of interventions. It enables the fruitful collaboration of all actors involved, is an open mechanism that controls inputs and outputs, and allows communities to participate actively in reconstruction. The organization of events within the design flow is based on a structured classification of four types: fixed point, unidirectional, bidirectional, and constrained. Each category reflects specific temporal and interdependency characteristics that influence the degree of flexibility

of the decision-making process and the propagation of effects along the sequence of related events.

Events classified as fixed points represent unchanging elements within the design sequence. These events typically act as starting points for the process and cannot be subject to time shifts. In addition, they do not require the presence of previous events to be triggered, acting as initial conditions of the design system. Their stability makes them key elements for anchoring the overall temporal sequence. Unidirectional events have a specific time elasticity, which can be postponed without significantly altering the cascade of subsequent events. This characteristic makes them particularly suitable for representing actions that, although functional to the process, do not exert direct constraints on dependent events. A delay in their execution can have limited repercussions, avoiding chain effects within the system. Bi-directional events are characterized by greater temporal flexibility, as they can be both anticipated and delayed, directly impacting the sequence of related events. Their temporal location significantly influences the design flow dynamics, necessitating careful monitoring of interdependencies. The capacity to change their temporal location allows the reconstruction process to adapt to emerging constraints or new priorities, facilitating adaptive project management. Finally, constrained events constitute strongly constraining elements in the temporal structure of the design flow. Their position in time directly determines the location of other related events on the same vertical line, generating a systemic propagation of changes. In this sense, their displacement leads to a reallocation of all dependent activities, making them critical factors in planning. Managing these events requires risk mitigation strategies to avoid generalized delays and dysfunctions in the planning sequence.

The distinction is not rigid; it is a continuous flow with sorting nodes without strict continuity. In this sense, time must be understood as a design factor – not only to numerically define the timeframe for each action's implementation but, more importantly, to establish an order of operations that minimizes waste, prevents delays, and enhances efficiency.

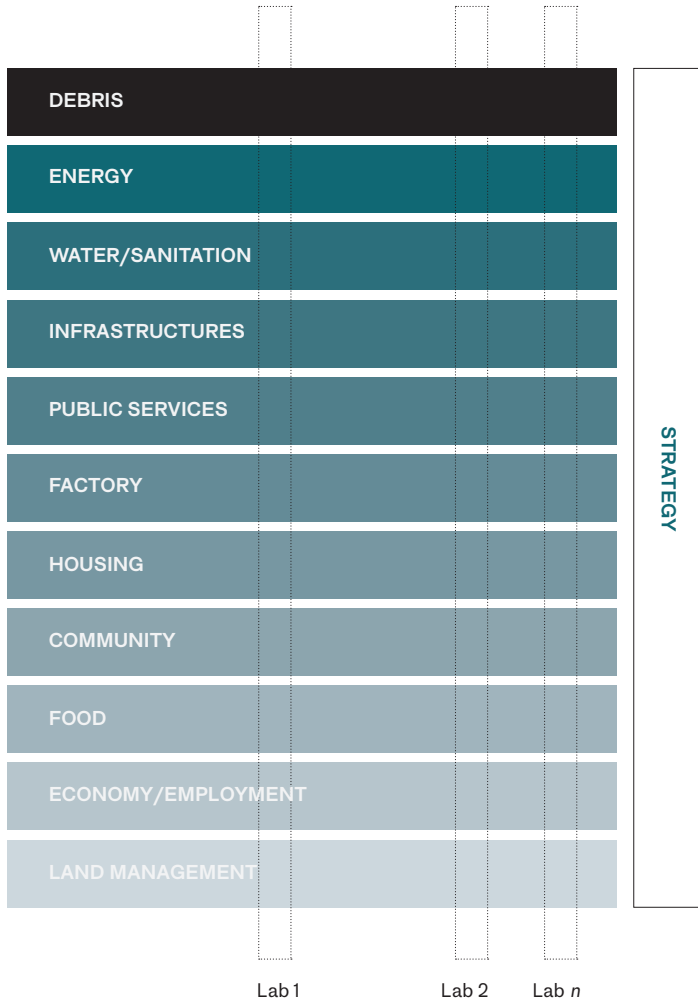
Once a sufficiently clear sequence of actions has been defined,

its implementation should take place through reconstruction laboratories to initiate the formation of urban cells and monitor their development. In this process, the integrator will be responsible for continuously supervising the overall progress, while expert teams (corresponding to specific pillars) will cooperate synergistically within the framework. The reconstruction workshops will intersect the pillars horizontally, consulting expert teams as needed and overseeing decisions at the cell scale. This system empowers local communities by establishing direct interlocutors who can maintain an ongoing dialogue about the expectations and needs of each group. Involving communities in decision-making from the project's inception enhances their sense of belonging and understanding of their territory's tangible and intangible dimensions. Planning choices can be calibrated according to their temporal flexibility and systemic impact, facilitating the coordinated management of resources and reducing uncertainty in the urban reconstruction process. Recognition of the nature of each event within the process allows planners to optimize the timing of interventions, minimizing criticality and maximizing the effectiveness of reconstruction strategies.

The design flow serves as a crucial integrative framework that ensures a coordinated, adaptive, and community-driven reconstruction process. It recognizes that urban recovery is not a series of isolated interventions but an interconnected system where spatial planning, resource availability, social needs, and economic opportunities must evolve in synergy. By fostering interdisciplinary collaboration and maintaining a flexible yet structured regulatory approach, this tool enables the transformation of urban environments into sustainable, resilient, and inclusive spaces where quantitative performance and qualitative living conditions are harmonized to support long-term development⁷.

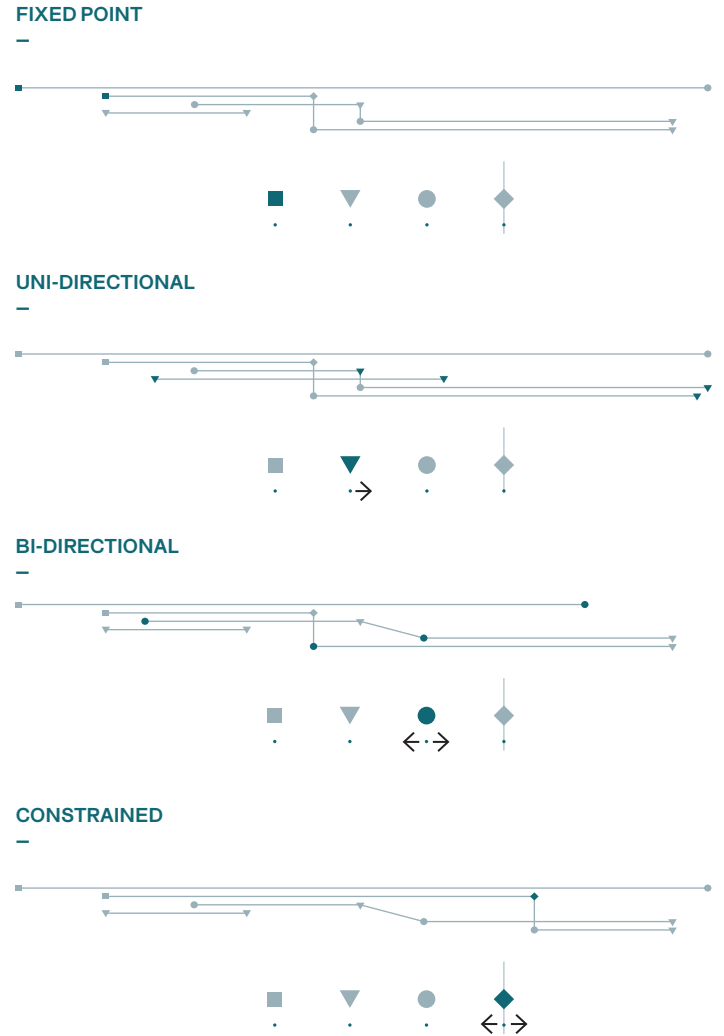
7 The chapter was jointly conceived by the authors. However, the opening paragraph, *Current Organizations and Criticalities and Design Flow: A Proposal* are attributed to Jacopo Galli, while *Pillars and Action: A Blueprint* and *Interaction Mechanisms* are attributed to Klarissa Pica.

Strategy
Pillars



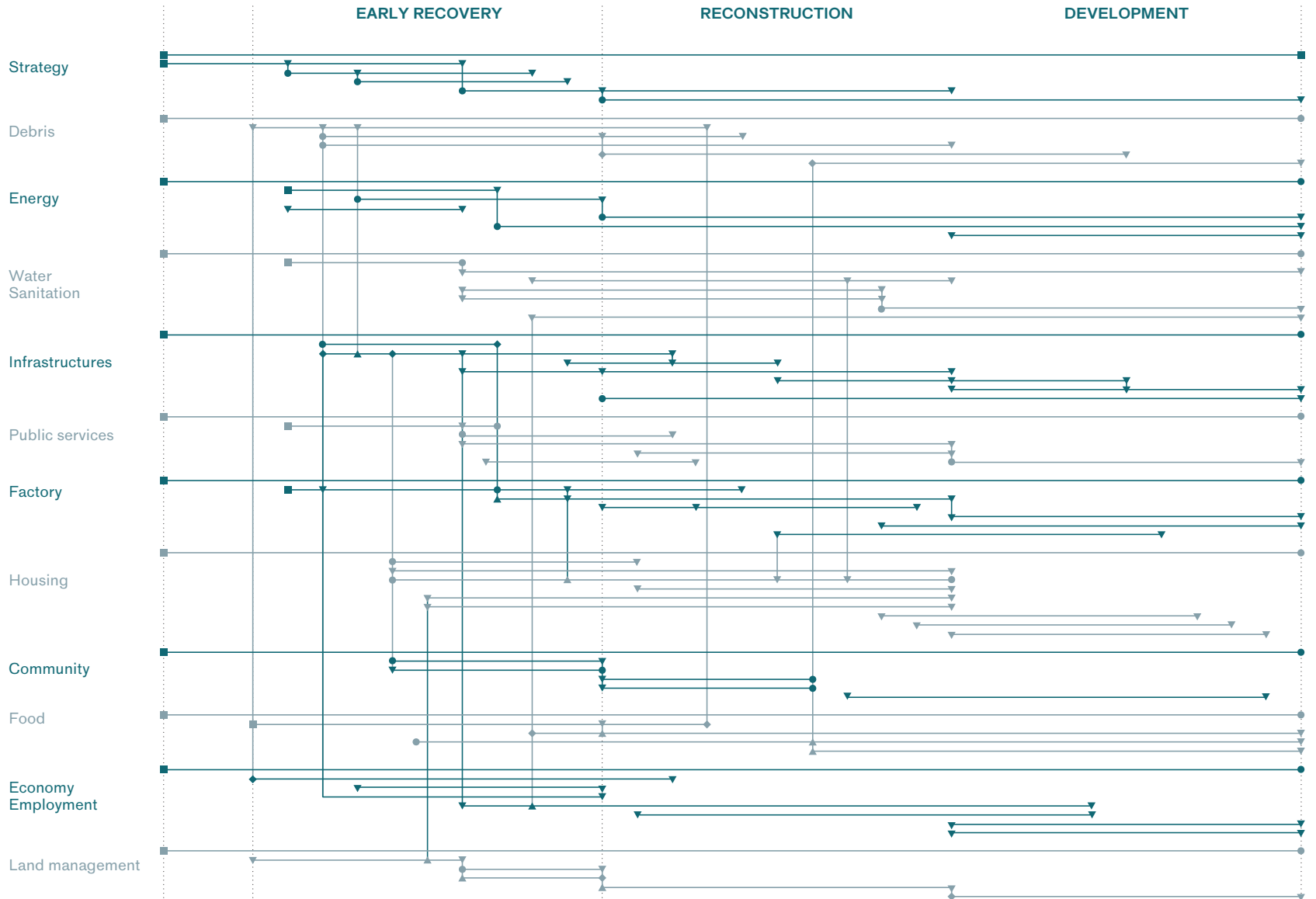
Urbicide Task Force, *Strategy. Pillars*, Università Iuav di Venezia consultancy for UNDP/PAPP, Venezia, 2024.

Design Flow
Functioning



Urbicide Task Force, *Design Flow. Functioning*, Università Iuav di Venezia consultancy for UNDP/PAPP, Venezia, 2024.

Design Flow
Overall Diagram



Urbicide Task Force, *Design Flow. Overall Diagram*, Università Iuav di Venezia consultancy for UNDP/PAPP, Venezia, 2024.

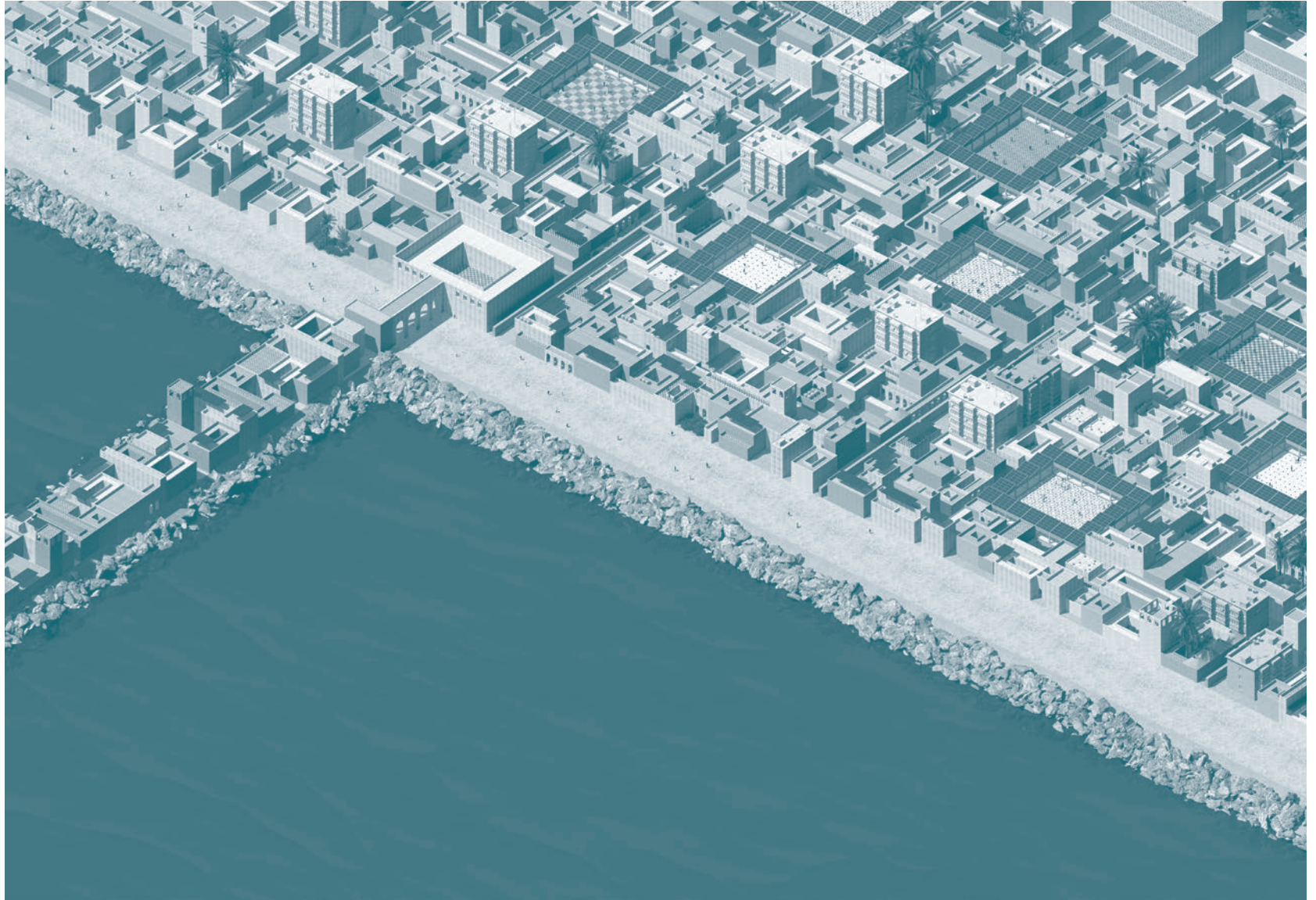
Design Flow
Early Recovery



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Urbicide Task Force, *Design Flow. Development*, Università Iuav di Venezia consultancy for UNDP/PAPP, Venezia, 2024.