فينيق غزة

# GAZA PHOENIX

2024

UNION OF GAZA STRIP MUNICIPALITIES
اتحاد بلديات قطاع غزة

PROG
Plattform for Reconstruction of Gaza

# GAZA PHOENIX

1st edition, Dec 2024

The Phoenix Gaza is the result of the collective effort of an interdisciplinary and inter-generational consortium of Palestinian and Palestine-based experts strongly rooted in and involved with the Palestinian contexts, its land and communities.

This proposal was developed through the tight collaboration and exchange between team members located in Gaza, West Bank and worldwide.

All members are contributing to this initiative on a voluntary basis.
The proposal reflects and harmonises the board's interdisciplinarity, gathering expertise from the planning, architectural, political strategist, legal, sociological, ethnographic, economic, environmental, historical, heritage, medical, and administrative fields, harmonising theoretical, academic, professional, and hands-on knowledge.

**Executive Board**

**Technical Team**

**Gaza Reconstruction Platform Reviewers**

**Advisory Board**

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The phoenix is a mythological animal rooted in Middle Eastern ancestry. It is an immortal bird able to miraculously resurrect from its ashes.

Symbol of resilience, regeneration and eternal life, the phoenix has often been associated with Gaza.

Just like Phoenix, Gaza shall rise again against the atrocious destruction that tried to annihilate it.

Gaza lives: its people, culture and spirit are alive, ready to return to life, looking forward to the future they deserve.

ALL-AROUND SUSTAINABLE
ACTUAL NEEDS CREDIBLE
LOCALLY ROOTED
RESILIENT GAZA
SOCIAL AFTER WAR
ENDOGNOUS RECOVERY
LOCAL AGENCY ENDOGENOU
SURVIVING
SPATIAL
RECONSTRUCTION
IN-WAR RECOVERY VALORISATIO
ROADMAP SUSTAINABLE

# VISION

The Phoenix Gaza Recovery Framework advocates for a **locally rooted**, **credible and all-around sustainable vision that revivificates Gaza and transitions it to the future.**

**The Gaza Phoenix Recovery Framework stands out for providing a roadmap that integrates future plans with the immediate in-war recovery actions, to be activated while the conflict and battles still unfold so as to preserve assets (material and immaterial) and prepare conditions for the after-war reconstruction**.

**It is the outcome and represents the instances that emerged from the endogenous mobilisation, initiative and expression of needs from the Palestinian and, more specifically, the Gazan civil society. These were collected into the present document by an independent consortium of stakeholders firmly rooted in the Palestinian context.**

**This proposal delivers reconstruction in a resilient, authentic and effective manner** that responds to actual needs on-site, recovers and regenerates surviving local assets, and transits Gaza towards a future determined on its own terms.

This proposal strongly claims space for the **indigenous perspective and local agency** in the debate on post-war Gaza. This roadmap develops on the premises of a fine-grained and firmly situated knowledge of conditions, assets, and dynamics on the ground, as well as a deep understanding of socio-cultural dynamics at all degrees, consistent with the Palestinian historical and contemporary culture.

**This proposal results from the extensive, long-run and inclusive exchange with the Palestinian society at large. Hence, it collects voices and consistent feedback from expert bodies, academics, entrepreneurs, professionals, representatives of civil institutions, youth, students, grassroots, and local communities.**

The Phoenix Gaza Recovery Plan consistently stands on the rejection of Gaza as a ***tabula rasa***. Its actions rest on the fine-grained knowledge and valorisation as strategic levers of the still immense social and spatial assets that are surviving in Gaza despite the genocidal, urbicidal and ecocidal war campaign. The strong rootedness in and knowledge of the local reality -its past, its current conditions, its future potentials- aims to oppose the imposition of foreign-generated plans, scarcely fitted, respectful and aware of the local context, when not blatantly exploitative and extractive, based on the false assumption that Gaza is a ground-zero.

# THE TEAM

The Gaza Phoenix Framework is developed and promoted by a multidisciplinary consortium of professionals and academics from Gaza and the West Bank, with the project team and promotors being strongly rooted within the Palestinian context. All contributors to this proposal at all stages are participating on a voluntary basis.

The structure and contents of this proposal are the result of the grounded knowledge of the local context, dynamics, practices, institutional frameworks, and the diversity of its social and spatial conditions, supported by a well-consolidated network of contacts and conspicuous hands-on experience in the field.

The assets brought in by the promoting team constitute a strong premise for an effective, feasible and site-responsive program that efficiently identifies and deals with local resources, limitations, criticalities and opportunities.

# Principles

## LIFE QUALITY-FOCUSED

*The definition of quality of life through a local and rooted prism, social relations, family, gender issues*

## CIRCULAR

*Circular Economy and its spatialisation*

## LOCALLY ROOTED

*Developed by an indigenous team both from Gaza and the rest of Palestine*

## CONSISTENCY WITH LOCAL IDENTITY

*Preservation of Gaza identity, heritage, sense of belonging and place, its social and urban fabric*

## RESILIENCE

*Developing responsive and adaptive mechanisms that protect local communities, environment and living spaces*

## CONTEXT-TAILORED

*Attending to the fine-grained diversity in the Gaza region as a strategic asset and a primary lever for the revivification of the region*

## PROPERTY RIGHTS AWARE

*Recognizes land rights as an essential tool of the Palestinian society for its existential survival, steadfastness, and the preservation of the social fabric*

## MULTIDISCIPLINARY

*Addressing the social, economic, legal, technical and various other wider parameters through the participation of indigenous specialists*

## MULTISCALE

*encompasses multiple scales, from the broader regional scale to the local and neighbourhood scale.*

## INTEGRATED TIMELINES

*articulates through multiple timelines synchronizing and coordinating the response to immediate needs at the early emergencystage, to the stabilisation phase and the long-run reconstruction and development of Gaza.*

## CONSULTATIVE TOOL

*Defines overarching objectives and principles and provides methods and tools to sustain and implement reconstruction from the immediate in-war stage to all-comprehensive planning of the farer future.*

## INTEGRATED, DYNAMIC VISION

*The action plan builds upon the consistent integration and coordination between different spatial scales and timelines.*

PRI
CIP
LES

# PRINCIPLES

The Gaza Phoenix Framework structures on the basis of funding principles

- **LIFE QUALITY-FOCUSED:**

The leading principle of this initiative is the definition of quality of life through a local and rooted prism, social relations, family, gender issues – to reflect and enhance the conditions for the specific way of life and its preservation in the aftermath of the war.

Being oriented to the idea of "reconstructing better than before", this proposal picks up the rebuild mission aligning it with the UN 2030 Sustainable Development Goals, integrating reconstruction, conservation and consolidation with the provision of measures for the future development, modernisation and responsiveness to climate change challenges.

- **CIRCULAR:**

The reconstruction and development proposed by the Gaza Phoenix consistently builds upon the principle Circular Economy and its spatialisation. This is elected as the paradigm that enables an integrated, holistic strategy that activates and brings to collaborate diverse sectors towards a same, coherent aim that privileges life quality, social and environmental justice, security and sustainable well-being. The implementation of such system at the regional level positions Gaza as a pioneer in the systematised and multi-scale implementation of circularity in the Middle Eastern context and the Southern EUMENA macro-region.

CIRCULAR CONSTRUCTION HUBS: the application of circular principles to the reconstruction relies on the concept of circular construction hubs[1] to integrate the war-generated debris as integral part of the building production cycle, connected with the re-activation and support of the local economic tissue at multiple scales for the treatment, recycling and production for the building sector.

- **CONSISTENCY WITH LOCAL IDENTITY**

The Gaza Phoenix proposes a framework for the reconstruction of Gaza that ensures the preservation of its identity, heritage, sense of belonging and place, its social and urban fabric while putting in place a strategy for its growth that rectifies both pre-war issues and the issues from the war itself.

The framework aims and harmonises two main goals:

+ a coherent evolution of Gaza that is respectful of its heritage and the local context,
+ to provide a space for growth and development coherent with the local context and its instances to partake in the global arena.



1 Tsui, T., Furlan, C., Wandl, A., & van Timmeren, A. (2024). Spatial parameters for circular construction hubs: location criteria for a circular built environment. Circular Economy and Sustainability, 4(1), 317-338.

- **LOCALLY ROOTED:**

The Gaza Phoenix framework is developed by an indigenous team of a rooted team both from Gaza and the rest of Palestine – with the skill and knowledge of the local context to address the reconstruction requirements from the social perspective. This ensures an efficient management of the project and optimisation of resources.

The team of local and rooted individuals and groups connect with local grassroots and ensures the meaningful and consistent involvement of the local stakeholders in defining visions for the reconstruction and realising their implementation.

- **CONTEXT-TAILORED:**

The Gaza Phoenix Framework appreciates and attends to the fine-grained diversity in the Gaza region as a strategic asset and a primary lever for the revivification of the region. Measures and actions are site and condition-specific. This framework is based on the understanding of the variety of contexts -urban centres, camps, rural and undeveloped areas, coastal lines, etc – and how each of these presents a diversity of the local constituencies, cultural backgrounds, practices and requirements.

The reconstruction plan avoids the "one size fits all" approach as a result, that will reduce Gaza into a tabula rasa, erasing its history and local social and urban fabric. Additionally, the plan considers the participation of the local community in all its stages and provides them a leading role in the development and implementation of the reconstruction plan.

- **PROPERTY RIGHTS-AWARE:**

The Gaza Phoenix enshrines property rights and land ownership of local stakeholders. The Gaza Phoenix Framework recognises land rights as an essential tool of the Palestinian society for its existential survival, steadfastness, and the preservation of the social fabric and its rootedness with and self-determination of their living place.

The Gaza Phoenix Framework pays attention to preventing the mass appropriation of land and the dislocation of local population under the pretext of reconstruction needs.

# PRINCIPLES

- **RESILIENCE:**

the Gaza Phoenix focuses on resilience as an essential quality to embed in the future Gaza. It develops responsive and adaptive mechanisms that protect local communities, environment and living spaces, helping to navigate the aftermath of the war and possible future critical events of different nature. This focus responds to the specificity of Gaza's conditions and problems, aligns Gaza with global necessities, and raises it to a pioneering model within the implementation of the UN's Sustainable Development Goals 2030.

- **A CONSULTATIVE TOOL:**

Distinctive of the Gaza Phoenix approach is the embedment of the evolution of local conditions. As such, instead of catering pre-packged, static masterplans, the Gaza Phoenix defines overarching objectives and principles and provides methods and tools to sustain and implement reconstruction from the immediate in-war stage to all-comprehensive planning of the farer future.

The role of experts in the Gaza Phoenix is to enable the social vision, not dictate to it. The future of Gaza must lie in its people's hands. The role of the multidisciplinary team of Gaza Phoenix Framework is to facilitate, voice and advocate for the indigenous view on reconstruction.

The initiatives stands in opposition to technocratic reconstruction plans that promote a top-down approach reductive of the process to a technical and expertise-driven output.

- **MULTIDISCIPLINARY:**

The Gaza Phoenix addresses the social, economic, legal, technical and various other wider parameters through the participation of indigenous specialists reflecting and embedding directives for the physical and spatial development within its broader context.

- **INTEGRATED, DYNAMIC VISION:**

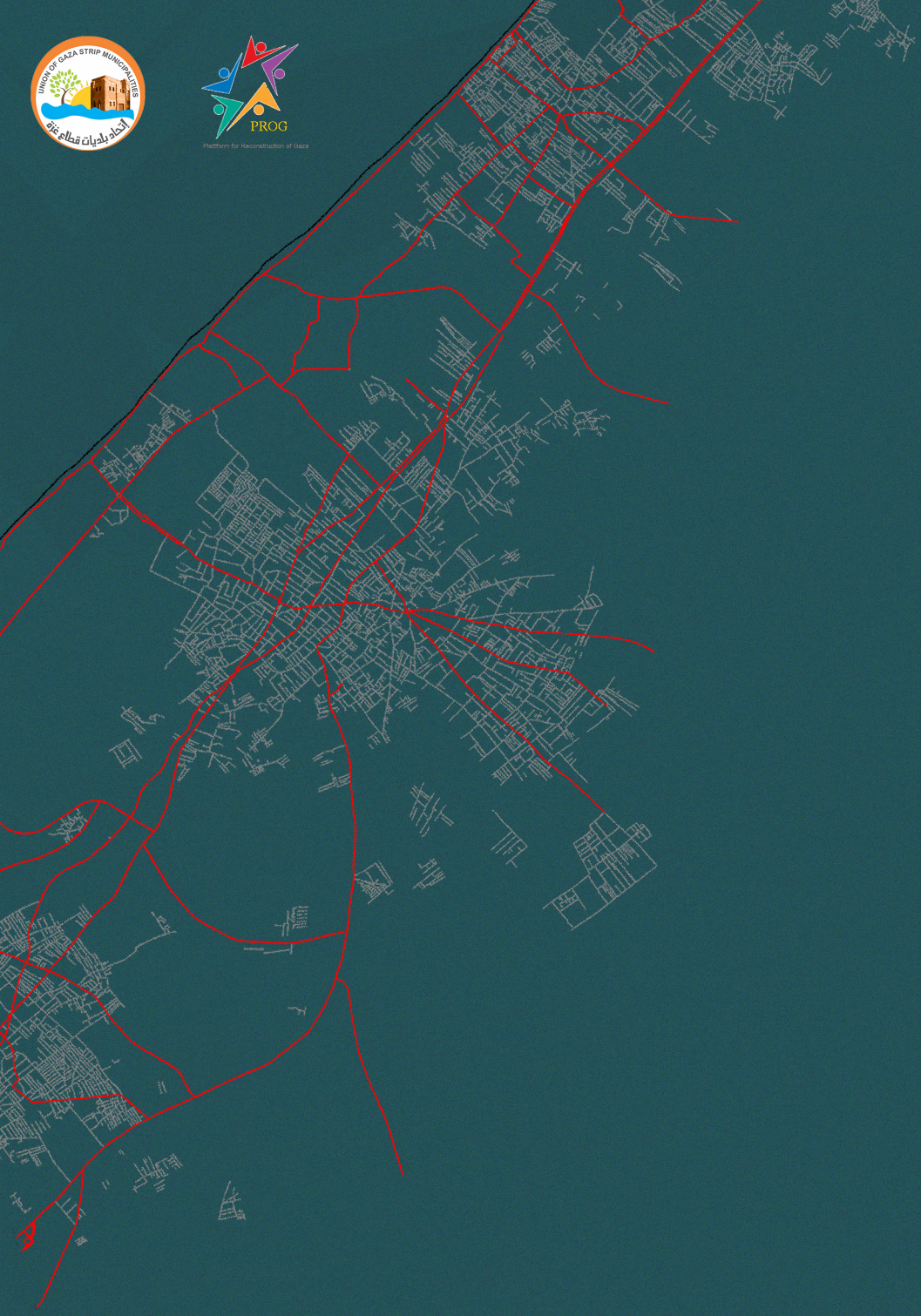
the Gaza Phoenix Framework relies on a dynamic vision. The action plan builds upon the consistent integration and coordination between different spatial scales and timelines.

- **MULTISCALE:**

The Gaza Phoenix Framework encompasses multiple scales, from the broader regional scale to the local and neighbourhood scale.

- **INTEGRATED TIMELINES:**

The Gaza Phoenix Framework articulates through multiple timelines synchronizing and coordinating the response to immediate needs at the early emergency stage, to the stabilisation phase and the long-run reconstruction and development of Gaza.



# ROADMAP TO REBUILDING GAZA

# APPROACH AND METHODOLOGY

The development of this framework involved multiple stages, including interdisciplinary discussions with experts from various fields, presentations, and feedback sessions with professionals. Crucially, it was shaped by rigorous internal discussions and constructive feedback from municipal officials, local experts, and academics. Additionally, key stages of the process were presented at international seminars and meetings to gather broader insights. The effort was further supported by hundreds of hours of voluntary work from Birzeit University students, who contributed to data collection, categorization, and visualization.

Therefore, the structure of the Gaza Phoenix Framework builds upon a robust knowledge of most recent best practices and projects, local perspective and continuous feedback and academic debate around post-war reconstruction and recovery.

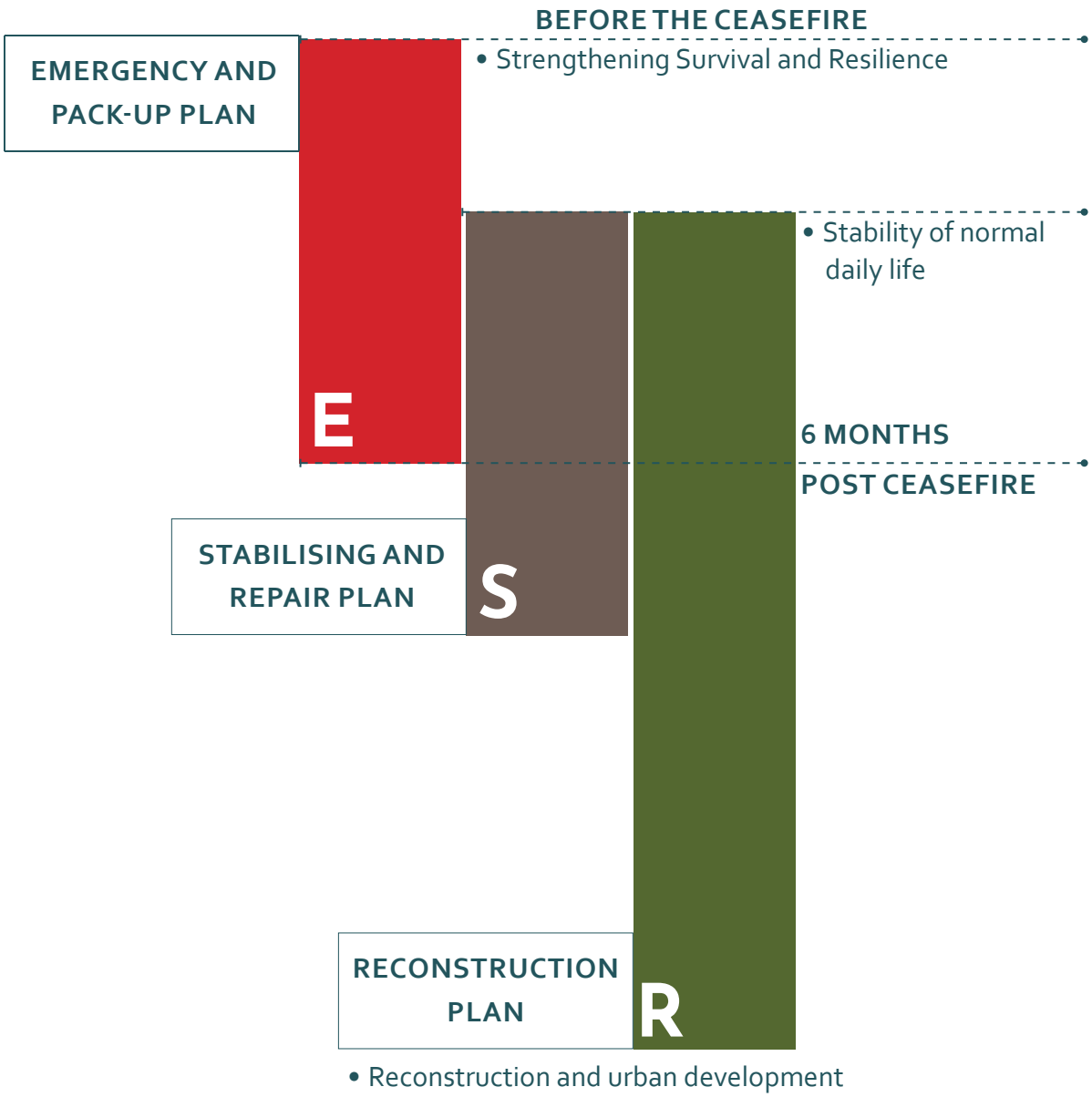
The framework is structured into three main components. The first is the Introductory Package, which outlines the core principles, team members, methodology, and document structure. The second component is the Roadmap for Gaza Rebuilding, and the third consists of essential appendices that provide critical support to the document.

Reflecting and substantiating the key principles of the Phoenix Gaza Framework, the roadmap articulates into three main phases:

1. **Short-term: emergency and pack-up plan (E)**
2. **Medium-term: stabilising and repair plan (S)**
3. **Long-term: reconstruction plan (R)**

Each phase articulates into four sections as follows:

1. **Criteria:** which are a set of leading theoretical and practical guidelines and standpoints to be followed for the planning and implementation of the strategic goals .
2. **Components:** which are spatial components of the masterplans or design schemes.
3. **Sectors and Actions:** in which actions for each service sector are mentioned and discussed briefly. At the end of each section, we provide the "Actions, Actors and Needs" table which summarizes the practical actions at each scale.


BEFORE THE CEASEFIRE
EMERGENCY AND PACK-UP PLAN
• Strengthening Survival and Resilience
• Stability of normal daily life
E
6 MONTHS
POST CEASEFIRE
STABILISING AND REPAIR PLAN
S
RECONSTRUCTION PLAN
R
• Reconstruction and urban development

# APPROACH AND METHODOLOGY

The long-term plan organizes its recommendations into four interrelated scales of intervention, reflecting the spatial and drawing scales commonly utilized in planning and design proposals:

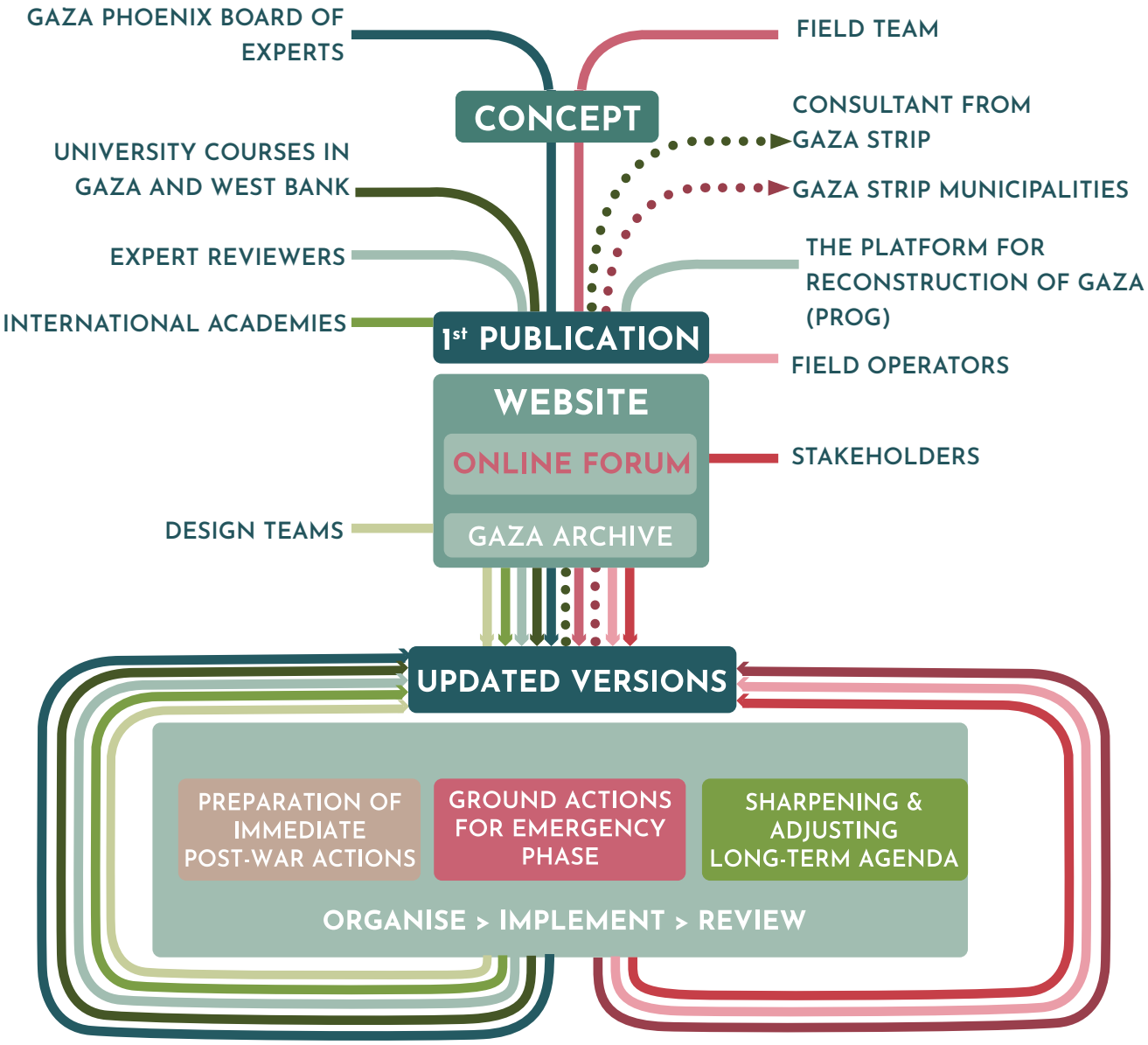
- **Regional Scale:** Encompasses the entire Gaza Strip, with drawing scales ranging from 1:25,000 to 1:100,000.
- **Urban Scale:** Focuses on the city's urban master plan, with drawing scales ranging from 1:1,000 to 1:25,000.
- **Neighbourhood Scale:** Addresses urban design projects, providing more detailed master plans for specific areas, including housing developments, business districts, and similar projects, with drawing scales between 1:250 and 1:1,000.
- **Architectural Scale:** Covers architectural design projects, small-scale landscape designs, street layouts, roundabouts, and landmarks, with drawing scales varying from 1:50 to 1:250.

This structure ensures a cohesive and strategic implementation of interventions, from the broad regional context down to detailed architectural designs.

Each work package and related action is spatialised and located on the basis of the evaluation on the ground by the team in Gaza and the meticulous analysis of a large array of indicators through the GIS technology and remote mapping, articulated through macro-categories that comprise:

1. **political and administrative geography,**
2. **natural resources and geography,**
3. **built environment,**
4. **land tenure,**
5. **economy and productive tissue,**
6. **infrastructures,**
7. **mobility,**
8. **demography and displacement,**
9. **damage mapping and war-induced geography,**
10. **pollution and hazardous components.**

Maps reporting the basis for the decisional process are included as Annexes to this document.




THE GAZA PHOENIX METHODOLOGY SCHEME

# HOW TO READ THE DOCUMENT

This document is designed to be flexible for different reading preferences and needs. You can approach it in one of two ways:

### 1. Comprehensive Reading

If you wish to gain a full understanding of the content, the document can be read sequentially from start to finish. This approach provides a holistic view, connecting all the sections in a logical flow.

### 2. Targeted Reading by Sector or Expertise

For readers focused on specific topics or areas of expertise, the document is structured to allow selective reading. Each phase is divided into three sections: Criteria, Components, and Sectors and Actions . As such, readers can select their interest or field of expertise and read directly. This is specifically important when it comes to Sectors and Actions: these are organized by service sector, enabling experts to locate actions relevant to their fields in each phase. For instance, health sector professionals can navigate to the designated pages for health-related actions in each phase without the need to read the whole document.

### Navigation guide:

To make selective reading easier, a navigation guide is included. This guide assigns page numbers to each section (Criteria, Components, Sectors and Actions, and Proposed Projects) for every phase. Readers can locate their specific areas of interest by referencing the intersections in the guide.

Example: To explore the Wartime Resilience criterion in the emergency phase, refer to the page number at the intersection of the relevant phase and section. Similarly, health sector experts can identify the actions proposed by consulting the appropriate intersection lines in the guide.

This structure allows readers to seamlessly navigate the document based on their needs and interests.

## Long-term Reconstruction phase


وعد
بنعمرها


Gaza وعد بنعمرها
Promise we will
rebuild it
غزة
وعد بنعمرها

AFTER WAR


Gaza
Promise we will rebuild it
وعد سنعيد بناؤها


Gaza
وعد بنعمرها


وعد
بنعمرها


Gaza Promise we will rebuild it

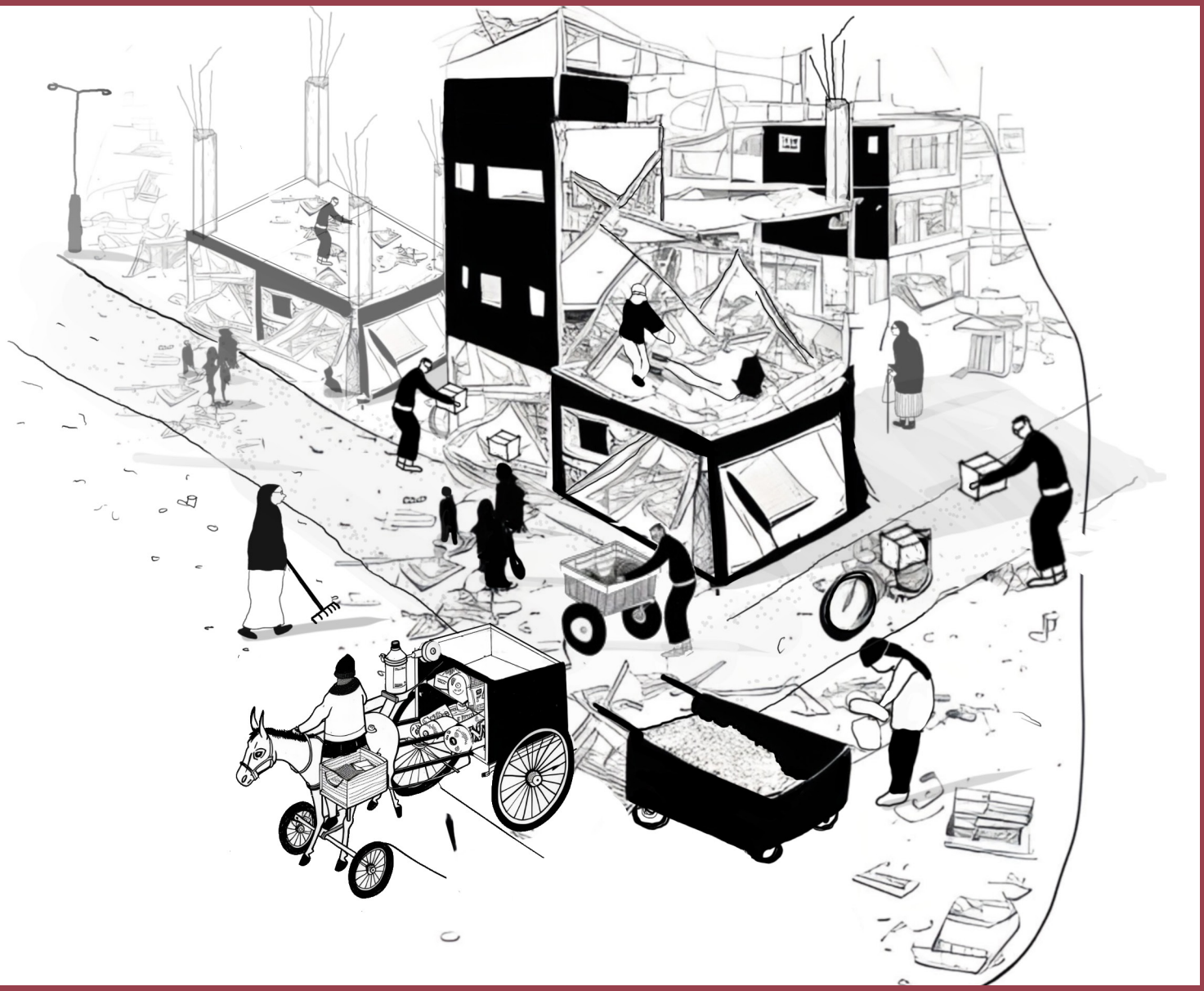
GAZA

# SHORT-TERM: EMERGENCY AND BACK-UP PHASE (E)

# SHORT-TERM: EMERGENCY AND BACK-UP PHASE (E)

This action plan is designed for immediate implementation, extending from the present moment to six months following the start of a ceasefire. It leverages local actors, resources, and community-driven initiatives, supported by essential materials and funding provided by international relief organizations (NGOs).

The plan prioritizes the provision of essential tools and materials alongside the mobilization and coordination of local communities. It draws on their resilience, ability to adapt to the destruction caused by conflict, and experiential knowledge. Interventions during this phase are intentionally flexible, reversible, and rooted in community-led processes.



# A. CRITERIA FOR EMERGENCY PHASE

## *E.C.1: WARTIME RESILIENCE*

The primary objective of this phase is to strengthen the survival and resilience of the population in the Gaza Strip. This entails securing access to essential materials and establishing a foundational level of infrastructure necessary to support basic livelihoods.

## *E.C.2: LOCAL AGENCY AND SOCIAL COHESION*

During the emergency phase, maintaining social cohesion and investing in local agency are essential. Enabling individuals to actively participate in rebuilding their immediate surroundings while ensuring their basic needs are met fosters a sense of ownership, empowerment, and community resilience.

## *E.C.3: CIRCULARITY AND SUSTAINABILITY*

Despite the challenges, authorities must take proactive measures to mitigate risks arising from destruction, pollution, and the spread of infections through necessary rubbish collection and rubble clearance near refugee centers.

## *E.C.4: PRODUCTIVITY*

Various modes of production should be supported and equipped with essential materials and tools, including agricultural initiatives, IT services, and crafts activities, to foster innovation, sustainability, and livelihood opportunities.

## *E.C.5: MOBILITY*

Enhancing mobility is essential, and various measures can be implemented to establish safe routes that minimize risks and ensure secure movement.

## *E.C.6: HERITAGE PRESERVATION*

The destruction of heritage artifacts necessitates immediate measures to preserve those that remain intact and lay the groundwork for the reconstruction and rehabilitation of partially or completely demolished heritage.

Cultural heritage includes both tangible and intangible elements such as sites, artifacts, traditions, and practices that carry profound cultural, historical, social, religious, or national significance. Preserving Gaza's cultural heritage is crucial, and proactive efforts must be prioritized to safeguard this legacy for future restoration and continuity.

Several actions can be initiated immediately by the municipality, the Ministry of Tourism and Antiquities and heritage preservation organizations, and the local community, including:

1. **Preservation of Building Materials**

- Collecting and sorting stones and other reusable building materials from the rubble of historic buildings.
- Protecting and storing heritage artifacts and materials recovered from these sites.

2. **Heritage Sites Archive**

- Establishing a comprehensive archive for destroyed heritage buildings, including detailed architectural drawings, photographs, and relevant documentation to facilitate their accurate restoration.

3. **Reconstruction Strategy**

- Developing a preservation and reconstruction strategy to guide the restoration of heritage sites, ensuring alignment with the master plan at local, regional, and national levels.

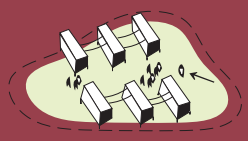
## Short-term: emergency and back-up
## PHASE (E)

# B.COMPONENTS OF EMERGENCY PLAN

The emergency phase follows a temporal plan designed to address the immediate needs of the population. The key components of this plan are outlined here, with specific actions for each sector presented in the following section. The plan includes the following:

**1. Survival nodes** nodes offer communities access to fundamental necessities while offering anchor points for mutual support and community life, seen as elements necessary for the material as well as psychological coping with the emergency. The survival nodes consist of a cluster of mobile facilities and services designed to be deployed and installed in specific locations based on immediate needs. The nodes encompass and can combine a wide range of essential amenities differently, incorporating many of the services listed in the following tables, and can also accommodate additional services according to local needs and possibilities.

**2. Campsites** are strategically located as temporary locations expecting eventual evacuation, potentially repurposable for other needs.



**3. Mobile units** (caravans) are designed as mobile, short-term facilities that offer shelter and/or services. They are reversible and adaptable for future repurposing.

| | | |
|---|---|---|
| E1: HOUSING | E2: HEALTHCARE | E3: TRANSPORTATION |
| E4: ECONOMY | E5: EDUCATIONY | E6: POWER GENERATION |

# C. SECTORS AND ACTIONS:

This section outlines the actions that need to be considered within each service sector. The success of this plan relies on the mobilization of the following key actors and the provision of the identified needs.

**Actors:** parties and individuals are involved either in organising, implementing, funding, or providing the services.

- Families or individuals
- Non-Governmental Organizations (NGOs)
- Neighborhood Committees
- Government (Gov)
- Municipality
- Construction firms

**Needs**:items and supplies that are required to implement the work packages

During this Emergency and Back-Up period, households and construction workers will collaborate in various activities such as building shelters, reinforcing existing structures, setting up temporary residences, or repairing original homes. Therefore, it is essential to provide the following support:

- DIY tools
- Construction Machines
- Construction materials
- Sanitation fixtures
- Cleaning tools
- Basic homeware: this includes essential for bedroom, toilet, and kitchen
- Delivery carts
- Plants, seeds and seedlings: for home farming and for purification like Eucalyptus or moringa oleifera.
- Mobile (off-grid) infrastructure ( infrastructural means that are not dependent on a structured network):
  - Water tanks: water tank trucks, water wells, water pumps, portable Seawater desalination units
  - Electricity: power generator, solar power generator, mobile charging station
  - Sanitation units: mobile toilet, mobile laundry, mobile showers
  - Internet.

| | | |
|---|---|---|
| E7: WASTE MANAGEMENT | E8: WATER INFRASTRUCTURE | E9: SEWAGE TREATMENT |
| E10: RUBBLE CLEARANCE | E11: MUNICIPAL AND GOVERNMENTAL SERVICES | |

## Short-term: emergency and back-up
## PHASE (E) Tools:

DIY TOOLS

CONSTRUCTION MACHINES

CLEANING TOOLS

CONSTRUCTION MATERIALS

SANITATION FIXTURES

PLANTS

seeds and seedlings: for home farming and for purification like Eucalyptus or moringa oleifera.

DELIVERY CARTS

## BASIC HOMEWARE:

This includes essential for bedroom, toilet, and kitchen

## MOBILE (off-grid) infrastructure

( infrastructural means that are not dependent on a structured network).

## ELECTRICITY

power generator, solar power generator, mobile charging stationEucalyptus or moringa oleifera.

## WATER TANKS,

water tank trucks, water wells, water pumps, portable Seawater desalination units Eucalyptus or moringa oleifera.

## SANITATION UNITS

mobile toilet, mobile laundry, mobile showers

## INTERNET

# Short-term: emergency and back-up PHASE (E)

## E1: HOUSING

Housing needs are already drastic even before war erupts, and the continuous war led to more destruction. However, we observe the well of the people to manage their living spaces with whatever available. During this phase we suggest to focusing on the following tactics and interventions:

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **E1.1: Self-help shelters**<br><br>*Shelters that are made by people themselves, mostly installed in private property* | Connect to off-grid infrastructure<br><br>Supply basic homeware and beddings | Families<br>Neighbourhood committees<br>NGOs[1] | Basic homeware<br><br>Building materials<br><br>DIY tools.<br><br>off-grid infrastructure |
| **E1.2: Appropriated structures:**<br><br>*Apartments or homes that are lightly damaged and appropriated for living.* | Provide families with essential amenities that they need. | NGOs<br>Neighbourhood committees<br>Municipalities | |
| **E1.3: Non-displaced:**<br><br>*Staying in their houses* | Connect to off-grid infrastructure.<br><br>Supply basic homeware | NGOs<br><br>Municipalities<br><br>Neighbourhood committees | |
| **E1.4: Campsites**<br><br>*Existing camps in different localities require enhancements to essential amenities to ensure optimal living conditions conducive to health and well-being* | Providing basic conditions of life:<br>1. Pavement of pathways (tiles)<br>2. Sewerage and drainage system<br>3. Tent fortification and pavement.<br>4. Public toilets<br>5. Collective kitchens<br>6. Electric generators<br>7. Public laundry<br>8. kids' playground area | Municipalities<br><br>Construction companies<br><br>Neighbourhood committees<br><br>NGOs<br><br>Gov. | Construction machines<br><br>Building materials.<br><br>off-grid infrastructure<br><br>basic homeware<br><br>kids' games |

1 NGOs can support with funding, volunteers or logistics like transport, storages and so on.

# E2: HEALTHCARE

With the health system severely destroyed, urgent action is needed to sustain the provision of essential health services.

The bulk of actions focus on:

- providing essential services (physical and psychological).
- service distribution.
- alternative/mobile devices for delivering medical assistance.

| Type of service | Action | Actors/ funders | Needs |
|---|---|---|---|
| **E2.1: Hospitals and Medical centres** | Immediate rehabilitation and reactivation of medical facilities (including accessible parts of medical complexes)<br><br>Provision of equipment<br><br>Provision of medications, water, food | NGOs<br><br>Gov.<br><br>Neighbourhood committees | Medical requirements<br><br>Off-grid infrastructure Construction machines<br><br>Building materials<br><br>DIY tools |
| **E2.2: Clinics** | Relocation and appropriation of alternative spaces | | |
| **E2.3 Mobile medical units** | Creation of mobile medical points and field hospitals | | |
| **E2:4 Chemistries** | Relocation and appropriation of alternative spaces / mobile units | | |
| **E2.5: Ambulances** | Alternative delivery | Neighbourhood committees | Introducing new sneaks<br><br>Delivery carts |
| | Providing /repairing Ambulances | NGOs<br>Gov. | |

# Short-term: emergency and back-up
# PHASE (E)

## E3: TRANSPORTATION

Enhancing mobility is crucial, thus opening closed roads and sneaks should be continuous by the municipality as well as the community.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **E3.1: Roads** | Clearance of rubbles to allow possible vehicular passage.<br><br>Re-establishment of essential road connectivity and passages | Neighbourhood committees<br><br>Municipality | Construction machines<br><br>Cleaning tools<br><br>DIY tools |
| **E3.2: Sneaks** | Introducing sneaks in risky areas | Neighbourhood committees | |

## E4: ECONOMY

The economic sector prioritizes sustaining diverse modes of production and economic activities, with a primary focus on meeting essential community needs, particularly food security. This approach emphasizes supporting micro-economies operating at the grassroots level by providing targeted assistance and strengthening ongoing efforts

Efforts to ensure food production and availability include the reactivation and establishment of bakeries, local food shops, markets, domestic farms, and collective kitchens. Essential equipment is also provided to enable the refurbishment, repair, recycling, and upcycling of spaces such as flea markets, warehouses, and repair shops. These facilities are strategically located within walking distance of residential areas to ensure accessibility.

Moreover, aid distribution centers can repurpose vacant buildings or be set up as temporary facilities, also situated within walking distance, to maximize convenience and efficiency.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **E4.1: Bakeries** | Immediate repair<br><br>Securing sources of raw materials<br><br>Allocate alternative locations | Business owners<br><br>NGOs<br><br>Municipalities | Raw materials<br><br>DIY tools<br><br>Building materials |
| **E4.2: Shops** | | | |
| **E4.3: Flea markets** | | | |
| **E4.4: Collective kitchens (takeyeh)** | Appropriating spaces<br><br>Securing sources of materials | NGOs<br><br>Municipalities<br><br>Neighbourhood committees | |
| **E4.5: Farms**[2] | Rehabilitation of farms, including home gardening<br><br>Supply of seeds and seedlings<br><br>Supply of basic rainwater collection systems | Farmers<br><br>Families<br><br>NGOs | seeds and seedlings<br><br>water |
| **E5.6:Tech** | Supporting e-commerce and online business<br><br>e-currency options | Families and individuals | Off-grid infrastructure |
| **E5.7:Crafts** | Encourage homemade crafts and sales options (markets) | Families and individuals | |

2 Numerous examples are being seen now even in beit Lahya, farmers are rehabilitating their land and trying to cultivate different types of plants

## Short-term: emergency and back-up PHASE (E)

The Beit Lahian farmer Yousef Abu Rabee, producing throughout wartime.
Source: https://nabd.com/t/135134146-a6fc05

Hussam Al-Attar built a wind turbine from recycled materials to provide electricity in camps.
Source: https://qudsnen.co/?p=43537

# E5: EDUCATION

At the Emergency Phase, schooling should concentrate on collective activities that combine the continuation of minimal education programs while enhancing community support, trauma processing and psychological assistance.

Higher education primarily relies on e-learning, supported by existing and planned initiatives from Palestinian universities in the West Bank. This approach builds on the teaching programs implemented since May 2024 through collaboration between the Ministry of Education and higher Education, Gaza's universities, Birzeit University, and Al-Najah University.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **E5.1: Schools activities** | Ricreation and teaching for pre-school and school-age children | Neighbourhood committees | Off-grid infrastructure |
| **E5.2: Equipment and furniture** | Provide equipment and furniture. | Municipality<br><br>NGOs | |
| **E5.3: Preparation of textbooks** | Printing and delivery of textbooks | Gov. | |
| **E5.4: Remote learning** | Support distance learning infrastructure, including internet and electricity<br><br>Provide laptops and tablets<br><br>Offer institutional access to digital learning materials and internet provision | Neighbourhood committees<br><br>NGOs<br><br>Gov.<br><br>Telecommunication companies | Off-grid infrastructure<br><br>Devices |

# Short-term: emergency and back-up PHASE (E)

## E6: POWER GENERATION

The primary efforts are concentrated on rehabilitating as much of the surviving electricity infrastructure as possible while providing off-grid solutions, such as solar energy systems.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **E6.1: Rehabilitation of partly damaged** | Repair and rehabilitation of recoverable structures | Municipality<br><br>Construction companies<br><br>Neighbourhood committees | Construction machines<br><br>Construction materials |
| **E6.2: Provision of off-grid infrastructure** | Estimation of needs<br><br>Purchase from providers | Municipality<br><br>NGOs | Based on the estimation |

## E7: WASTE MANAGEMENT

At the emergency stage, solid waste management responds to the preservation of public health and the prevention of the spread of diseases. The action focuses on removing waste from inhabited areas and transferring it to temporary dump sites prepared by local authorities.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **E7.1: Dump sites** | Creation of temporary dumpsites in relatively safe zones<br><br>Planning for permanent dumpsites<br><br>Design of dumpsites | Municipality<br><br>Neighbourhood committees<br><br>Design teams | Construction machines<br><br>Local data |
| **E7.2: Collection** | Collection in assigned spots in each neighbourhood.<br><br>Transfer of wastes to temporary dump sites when conditions allow | Municipality<br><br>Neighbourhood committees | DIY tools<br><br>Delivery carts |
| **E473 Waste Management System (WMS)** | Design of a comprehensive environmental waste management system is prepared for post-war implementation | Gov.<br><br>Municipality<br><br>Design teams | |

# Short-term: emergency and back-up PHASE (E)

## E8: WATER INFRASTRUCTURE

The primary efforts focus on rehabilitating as much of the surviving water network as possible, while supporting small-scale desalination units and mobile water supply services.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **E8.1: Rehabilitation of partly damaged** | Repair and rehabilitation of recoverable structures | Municipality<br><br>Construction companies<br><br>Neighbourhood committees | Construction machines<br><br>Construction materials |
| **E8.2: Provision of mobile providers** | Estimation of needs<br><br>Purchase from providers | Municipality<br><br>NGOs | Based on the estimation |

## E9: SEWAGE TREATMENT

As the sewage network is largely damaged, alternative environmental solutions can be used through the use of septic tanks and DIY cesspits. Methods rely on the introduction of plants like Eucalyptus or Moringa oleifera, and the use of low-tech, passive methods for filtering and purifying waters.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **E9.1: Septic tanks** | Building septic tanks | Families and individuals<br><br>NGOs<br><br>Neighbourhood committees<br><br>Municipality | Building materials<br><br>Plants<br><br>Off-grid infrastructure<br><br>DIY tools |
| **E9.2: DIY cesspits** | Digging and building septic tanks | | |
| **E9.3: Phyto-depuration system** | Planting purifying plants next to cesspits | | |

## E10: RUBBLE CLEARANCE

Given the scale of destruction, the rubble clearance is estimated to take several years.

The timing, method of collecting, transfer, treatment and final destination should be proposed as early as possible in order to start immediately after a ceasefire is approached. At this stage, planning for the process is required in addition to temporary clearance for emergencies.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **E10.1: Temporary clearance** | Temporary clearance for emergency | Families and individuals<br><br>Neighbourhood committees<br><br>Municipality | Construction machines<br><br>Off-grid infrastructure<br><br>DIY tools |
| **E10.2: Planning** | Planning for long-term program for the whole process | Gov.<br>Municipality<br><br>NGOs | |

## E11: MUNICIPAL AND GOVERNMENTAL SERVICES

Despite the prevailing security threats and the destruction of public administration facilities, priority should be given to facilitating urban governance and public services to the fullest extent possible. This includes managing policing systems, civil defense, and essential municipal services

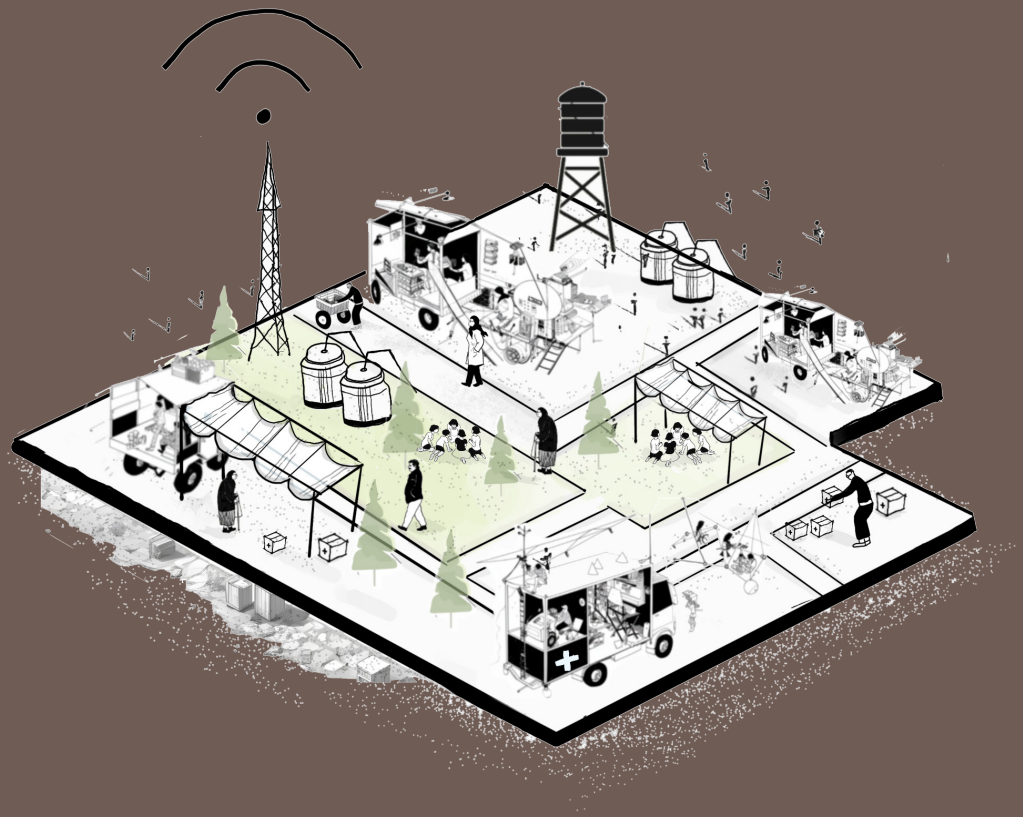
| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **E11.1: Stations and buildings** | Immediate essential repair for partly damaged centres<br><br>Use of temporary stations | Municipality<br><br>Construction companies<br><br>Gov. | Connect to Intact infrastructure<br><br>Off-grid infrastructure<br><br>Construction materials<br><br>Construction machines |
| **E11.2: Vehicles / equipment** | Buy new vehicles and equipment | Municipality<br><br>NGOs<br><br>Gov. | |

# MEDIUM-TERM STABILISING AND REPAIR PHASE (S)

# MEDIUM-TERM STABILISING AND REPAIR PHASE (S)

This phase marks a stabilisation period commencing immediately after the ceasefire. During this stage, authorities and community leaders must urgently guarantee the fulfilment of basic needs for all citizens, serving as a transition towards normalcy in post-war daily life. Moreover, this phase initiates the planning for the reconstruction phase.

Interventions during this stage should align with a comprehensive reconstruction plan, facilitating the transition from temporary to permanent solutions. The plan is set to begin with the ceasefire and last for one year.



*SURVIVAL NODE*

# MEDIUM-TERM STABILISING AND REPAIR PHASE (S)

## A. CRITERIA FOR STABILISING PHASE

### *S.C.1: WARTIME RESILIENCE*

The primary objective of this phase is to strengthen the survival and resilience of the population in the Gaza Strip, while reestablishing a sense of regularity to restart daily life and preparing for the reconstruction phase. This includes securing access to essential materials and establishing a foundational level of infrastructure to support basic livelihoods.

### *S.C.2: LOCAL AGENCY AND SOCIAL COHESION*

During the stabilizing phase, it is crucial to maintain social cohesion, reunite families, and provide dignified living and productive options. While addressing the psychological, emotional, and physical stability of the population is a priority, it is equally important to offer opportunities for individuals to engage in the rebuilding process. Involving people in the reconstruction of their immediate surroundings, while ensuring their basic needs are met, promotes a sense of ownership, empowerment, and strengthens community resilience.

### *S.C.3: CIRCULARITY AND SUSTAINABILITY*

Despite the challenges, a key priority at this stage is to purify the environment to the greatest extent possible. This includes collecting debris and rubbish, managing the sewage system, and restoring infrastructure functionality to enable the resumption of sustainable living. Authorities must take proactive measures to mitigate risks associated with destruction, pollution, and the spread of infections.

### *S.C.4: PRODUCTIVITY*

At this stage, various modes of production should be supported, sustained, and equipped with the necessary materials and tools. Light industries, crafts, as well as the IT and innovation sectors, have the potential to resume quickly and should be prioritized for revival.

## S.C.5: MOBILITY

Enhancing mobility is essential, with road clearance as a priority within a broader rubble removal strategy. Additionally, restoring the public transport system will be critical. Measures should be implemented to support this sector by introducing and acquiring a new bus system, along with regulating flexible taxi and delivery services (like Uber and Kareem) to ensure efficient and accessible transportation.

## S.C.6: HERITAGE PRESERVATION

Several actions can be initiated immediately after the ceasefire by the municipality, the Ministry of Archaeology, tourism and heritage preservation organizations, and the local community. These actions should complement and build upon the activities outlined in the Emergency Plan, including:

1. **Preservation of Building Materials**
- Collecting and sorting stones and other reusable building materials from the rubble of historic buildings.
- Protecting and storing heritage artifacts and materials recovered from these sites.

2. **Heritage Sites Archive**
- Establishing a comprehensive archive for destroyed heritage buildings, including detailed architectural drawings, photographs, and relevant documentation to facilitate their accurate restoration.

3. **Reconstruction Strategy**
- Developing a preservation and reconstruction strategy to guide the restoration of heritage sites, ensuring alignment with the master plan at local, regional, and national levels.

4. Reconstruction plan
- at this stage the authorities should assign conservation sites, prepare architectural rehabilitation and regeneration designs, and starts the implementation processes.

# MEDIUM-TERM STABILISING AND REPAIR PHASE (S)

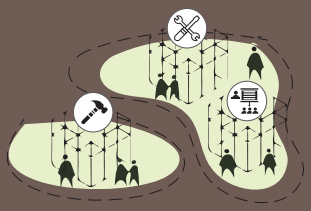
## B.COMPONENTS OF MEDIUM PLAN

The Stabilization phase follows a temporal plan designed to address immediate needs, establish a certain level of regularity, resume productivity, and provide dignified living conditions. The key components of this plan are outlined here, with specific actions for each sector presented in the following section. The plan includes the following:

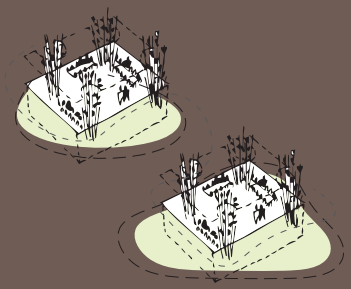
**1. Survival nodes** initially established in the emergency phase (see previous chapter) to fulfil communities' basic needs and support social cohesion, can either remain a temporary device stationed in specific locations or be consolidated and further developed as community centres in accordance with proposed urban master plans during this phase and local conditions.

**2. Campsites** incorporate elements such as survival nodes, sewage treatment facilities, temporary public structures accommodating various activities, and designated areas for temporary waste disposal. These sites can accommodate temporary housing units.

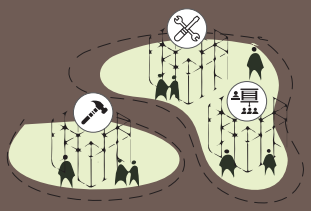
**3. Mobile units and shelters** should be designed to be mobile and adaptable for future repurposing such as beach chalets, farmhouses, or other activities.



**4. Workshops** are established to design and manufacture furniture that meet the community's evolving needs (design of such types of furniture is needed).



**5. Biological depuration systems** are implemented to sustainable infrastructures for the treatment of soil, waters and air. This infrastructural network serves the regional scale, supporting parallel waste management, the implementation of natural infrastructures, biodiversity and the consequent resilience of Gaza. The implementation of the infrastructural network will integrate the previous micro-facilities with broader sites. This part of the action plan is due to be developed in particular through the collaboration between competent bodies in the local authorities and specialized task forces.



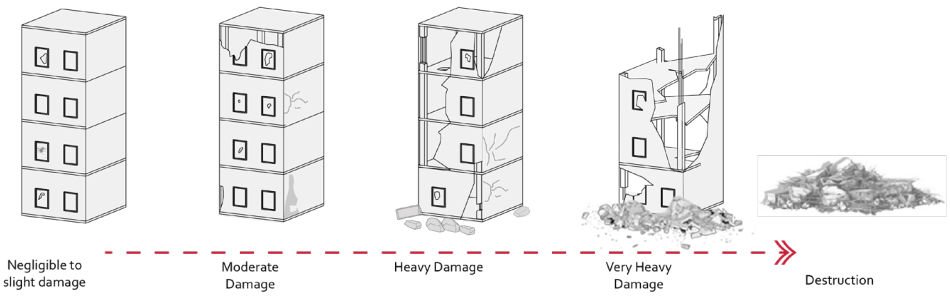
**6. Al-Aouneh** is a stable corps of volunteers for the reconstruction of Gaza. The body is a multidisciplinary task force that encompasses local and foreign contributors. At this stage, units from Al-Aouneh will be accommodated in temporary camps that can be organised through volunteering organisations (see the paradigm of Sawaed19 for an applicative example).

# Medium-term stabilising and repair PHASE (S)

**7. DAMAGE & NEED ASSESSMENT** The Damage & Need Assessment (DNA) activity must start systematically as soon as the conflict halts. This will rely on consolidated EMS-98 and estimation classes. The implementation of surveys should rely on the integration between off-site satellite technologies and on-site local task forces appointed for the extensive survey of the physical conditions of buildings.

The DNA is performed through the collaboration of local teams of experts, international agencies and academic-related research centres with specific expertise in the field and deep knowledge in technological tools for the remote assessment. In particular, the Gaza Phoenix anticipates the collaboration with the Beirut Urban Lab, which is already engaged in the constant monitoring of damage in Gaza through the project "Tracking Urbicide".

[1]These could be either standard or exploiting passive and sustainable techniques, such as phyto purification systems.
[2]https://experience.arcgis.com/experience/5c24d93ffc234d709efbbeb355d9496c/page/Page/?views=Damage




| | | |
|---|---|---|
| S1: HOUSING | S2: HEALTHCARE | S3: TRANSPORTATION |
| S4: ECONOMY | S5: EDUCATION | S6: POWER GENERATION |

# C. SECTORS AND ACTIONS:

This section outlines the actions that need to be considered within each service sector. The success of this plan relies on the mobilization of the following key actors and the provision of the identified needs.

**Actors:** parties and individuals that are involved either in organising, implementing, funding, or providing the services.

During this period different actors will be involved in these activities include:

- Government
- Municipality
- Families or individuals
- Non-Governmental Organizations (NGOs)
- Neighbourhood committees
- Construction companies

**Needs**: items and supplies that are required to implement the work packages

During the stabilisation period, various rebuilding activities can commence formally and informally. Essential repair and recycling of basic urban facilities like hospitals, civil defence, government buildings and other can start immediately. Additionally, households and construction workers will cooperate in various activities such as repairing homes, reinforcing existing structures, or setting up temporary residences. Accordingly, essential equipment must be included to support the programmed action plan.

- DIY tools
- Construction Machines
- Construction materials
- Sanitation fixtures
- Cleaning tools
- Basic homeware: this includes essential for bedroom, toilet, and kitchen
- Delivery carts
- Plants, seeds and seedlings: for home farming and for purification like Eucalyptus or moringa oleifera.
- Mobile (off-grid) infrastructure ( infrastructural means that are not dependent on a structured network):
  - Water tanks: water tank trucks, water wells, water pumps, portable Seawater desalination units
  - Electricity: power generator, solar power generator, mobile charging station
  - Sanitation units: mobile toilet, mobile laundry, mobile showers
  - Internet.

| | | |
|---|---|---|
| S7: WASTE MANAGEMENT | S8: WATER INFRASTRUCTURE | S9: SEWAGE TREATMENT |
| S10: RUBBLE CLEARANCE | S11: MUNICIPAL AND GOVERNMENTAL SERVICES | |

# Medium-term stabilising and repair PHASE (S) Tools:

DIY TOOLS

CONSTRUCTION MACHINES

CLEANING TOOLS

CONSTRUCTION MATERIALS

SANITATION FIXTURES

PLANTS

seeds and seedlings: for home farming and for purification like Eucalyptus or moringa oleifera.

DELIVERY CARTS

## BASIC HOMEWARE:

This includes essential for bedroom, toilet, and kitchen

## MOBILE (off-grid) infrastructure

( infrastructural means that are not dependent on a structured network).

## ELECTRICITY

power generator, solar power generator, mobile charging stationEucalyptus or moringa oleifera.

## WATER TANKS,

water tank trucks, water wells, water pumps, portable Seawater desalination units Eucalyptus or moringa oleifera.

## SANITATION UNITS

mobile toilet, mobile laundry, mobile showers

## INTERNET

# Medium-term stabilising and repair PHASE (S)

## S1: HOUSING

Core to the stabilisation stage is the support for the self-rehabilitation and reappropriation of existing spaces. Additionally, campsites should be relocated to planned sites allocated for long-term use and future transformation and adaptation for other purposes.

This stage of the housing development bridges and prepares the dwelling assets from the emergency period to the permanent post-war reconstruction.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **S1.1: Self-help shelters** | see E1.1 | see E1.1 | see E1.1 |
| **S1.2: Appropriated structures:** | see E1.2<br><br>Connecting to repaired infrastructure | see E1.2 | see E1.2 |
| **S1.3: Non-displaced:** | | | |
| **S1.4: Campsites**<br><br>*Enhance existing, relocate or establish new ones.* | Establish or relocate if possible.<br>Provide basic conditions of life as in E1.4 | see E1.4 | see E1.4 |
| **S1.5: Caravans** | Prepare campsites as in S1.4.<br>Establish distribution procedures for private families | Municipalities<br>Construction companies<br>NGOs<br>Gov. | Construction machines<br><br>Building materials.<br><br>Basic homeware |
| **S1.6: Undamaged apartments**<br><br>*All undamaged apartments should be prepared and fitted ready as temporary residences* | Inventory of undamaged apartments.<br>Inventory of needed equipment and furniture<br>Furnishing the apartments<br>5 years lease contracts paid by donors | Municipalities<br>Construction companies<br>Neighbourhood committees<br>NGOs<br>Gov. | Construction machines<br>Building materials.<br>off-grid infrastructure<br>basic homeware |
| **S1.7: Partly damaged units' rehabilitation** | Repair needs and costs assessment<br>Materials distribution mechanism<br>Repair and rehabilitate | Municipality<br>Construction companies<br>Families and individuals<br>Gov. | Construction machines<br>Construction materials<br>DIY tools |

## S2: HEALTHCARE

The stabilisation phase focuses on the consistent rehabilitation of strategic medical centres. The rehabilitation of main healthcare complexes is paralleled by the integration with field hospitals and mobile medical units, located according to the distribution of communities on-site, to cover core health services.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **S2.1: Hospitals** | Repair and rehabilitation<br><br>Redistribution of field hospitals<br><br>Delivery of medical tools, equipment, medication<br><br>Increase of ambulances<br><br>Mobile medical units (caravans)<br><br>Establishing a long-term plan for health care system. | Government<br><br>NGOs<br><br>Construction companies | Sites<br><br>Construction machines<br><br>Construction |
| **S2.2: Medical centres** | | | |
| **S2.3: Clinics** | | | |
| **S2.4: Storages (governmental storages)** | | | |

## S3: TRANSPORTATION

At this stage mobility should be enhanced through opening more streets, establishing temporary transport system and plan for long-term transportation system in the Gaza Strip to be incorporated within the long-term reconstruction plan.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **S3.1: Roads** | Opening more streets within the prepared rubble clearance plan. | Municipality | Construction machines<br><br>Cleaning tools<br><br>DIY tools |
| **S3.2: transportation system** | Planning for a long-term transportation system for the Gaza Strip | Design team | Local data an previous studies |
| **E3.3: Mobility Plan** | A new moods of mobility options should be included in the urban master plans | Municipality | |

## S4: ECONOMY

The Stabilization phase aims to support the revival of the local productive and entrepreneurial ecosystem. This stage specifically targets existing businesses on the ground, providing substantial support to enhance their operations and increase their relevance and stability. The activation or strengthening of new economic sectors further complements these efforts. At this stage, the focus will be on preparing the necessary infrastructure and expertise, involving technical schools, undergraduate programs, and professional training to develop a skilled workforce for emerging sectors.

Efforts to restore food production and availability to normal conditions are also a priority. This phase will focus on supporting the expansion and establishment of a network for the production and distribution of food, including new bakeries, local shops, domestic farms, warehouses, and collective kitchens. These resources should be strategically distributed throughout the city to reduce residents' dependency on vehicular transportation.

Additionally, aid distribution centres can repurpose vacant buildings, transforming them into distribution points that are also within walking distance for residents.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **S4.1: Bakeries** | See E3.1-4 | See E3.1-4 | See E3.1-4 |
| **S4.2: shops** | | | |
| **S4.3: flea markets** | | | |
| **S4.4: collective kitchens (takeyeh)** | | | |
| **S4.5: farms** | See E3.5<br>Establish new community farms | See E3.5 | See E3.5<br><br>Sites for new farms |
| **E4.6: Tech** | Support of e-commerce and online businesses<br><br>E-currency | Families and individuals<br><br>Start-ups and tech companies | Off-grid infrastructure<br><br>Connection to repaired infrastructure.<br><br>Raw materials |
| **E4.7: crafts and light industries** | Repair of pre-existing workshops<br><br>Support to carpentry workshops for furniture, blacksmith workshops, factories for sustainable building products through renewable and local materials.<br><br>Encourage homemade crafts and sales options (markets) | Families and individuals<br><br>Private Sector | |
| **E4.8: Workshops and Light Industry** | Immediate repair of partially demolished industrial facilities<br><br>Creation of new workshops, particularly for furniture and reconstruction equipment and materials | Gov.<br><br>Municipality | |
| **E4.9: Chain supply** | Ensure the flow of raw materials | Gov. | |

# Medium-term stabilising and repair PHASE (S)

## S5: EDUCATION

The action plan for education in the Stabilization Phase aims to bring back teaching activities to normality through a gradual process. This entails tackling the restoring of physical infrastructures for education, with priority for primary and secondary levels, so to allow pupils to access continuative, in-person schooling.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **S5.1: Schools** | Repair of partly damaged schools<br>Construction of new teaching facilities | Construction companies<br><br>Gov. | Intact infrastructure<br><br>Off-grid infrastructure<br><br>Construction materials<br><br>Construction machines |
| **S5.2: Equipment and furniture** | Supply of equipment and furniture | Gov. | |
| **S5.3: Preparation of text books** | Printing and delivery of textbooks | Gov. | |
| **S5.4: Remote learning** | Support to distance learning infrastructure, including internet and electricity.<br><br>Supply of laptops and tablets<br><br>Offer of institutional access to e-journals | Neighbourhood committees<br><br>NGOs | Off-grid infrastructure<br><br>Devices |

## S6: POWER GENERATION

In the Stabilization Phase, activities related to electricity infrastructure focus on initiating the permanent reconstruction process. This involves assessing the damage, restoring essential electrical services, and beginning the rebuilding of the electricity grid to ensure a stable and sustainable energy supply for the community.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **S6.1: Rehabilitation of partly damaged** | Estimation of repair needs and costs<br><br>Repair and rehabilitation | Municipality<br><br>Construction companies | Construction machines<br><br>Construction materials |
| **S6.2: Provision of off-grid infrastructure** | Estimation of needs<br><br>Purchase from providers | Municipality<br><br>Relief agencies | Based on the estimation |
| **S6.3: Long-term planning** | Planning for long-term sustainable infrastructure of the Gaza strip | Gov<br><br>Municipalities<br><br>Design teams | Local data an previous studies |

## S7: WASTE MANAGEMENT

At this stage the solid wastes collection continues to rely on temporary dump sites until the permanent sites can be reached. In parallel, the Waste Management System (WMS) starts to be implemented.

From the very early stage, waste treatment sites and waste management should harmonize to pursue the recycling of materials through a multi scalar approach that supports the collection and sorting chain that starts at the neighbourhood scale.

Inherent to this task is the collaboration of civil engineers, environmental specialists, urban planners, municipalities, enterprises, and civil society for the design of the process and the spatial implementation.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **S7.1: Dump sites** | Establishment of permanent dump sites | Municipality | Construction machines<br><br>Sites and design |
| **S7.2: Collection** | Collection and transfer of wastes to temporary or permanent dump sites<br><br>Supply of more collecting trucks | Municipality<br><br>Neighbourhood committees<br><br>NGOs | Collecting tucks<br><br>Garbage containers |
| **S7.3: Waste management system** | Start a methodology to implement the waste management system | Gov.<br><br>Municipality | |

## S8: WATER INFRASTRUCTURE

The bulk of actions focuses on the rehabilitating as much as possible surviving water network while supporting small scale desalination units and mobile water providers.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **E8.1: Rehabilitation of partly damaged** | Repair and rehabilitation of recoverable structures | Municipality<br><br>Construction companies<br><br>Neighbourhood committees | Construction machines<br><br>Construction materials |
| **E8.2: Provision of mobile providers** | Estimation of needs<br><br>Purchase from providers | Municipality<br><br>NGOs | Based on the estimation |
| **E8.3: long term plan** | Planning for a long term regional and urban water distribution system | Gov.<br><br>Municipality | |

## S9: SEWAGE TREATMENT

As repairing the damaged sewage network system requires an extended time, a scheme for the drainage and treatment of wastewaters through environmental solutions at the housing and neighbourhood scale can be implemented. This mainly entails the combination of septic tanks and DIY cesspit with planting of Eucalyptus or Moringa Oleifera.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **S9.1: Septic tanks** | Building of septic tanks | Families and individuals<br><br>NGOs<br><br>Neighbourhood committees<br><br>Municipality | Building materials<br><br>Plants<br><br>Off-grid infrastructure<br><br>DIY tools |
| **S9.2: DIY cesspit** | Digging and building cesspits | | |
| **S9.3: Plants** | Planting plants next to cesspits | | |
| **E9.4: Connecting** | Connect to the nearest sewage network if available | Neighbourhood committees<br><br>Municipality | Infrastructure material |
| **S9.4: Planning** | Design of long term environmentally sustainable sewage disposal system | Municipality<br><br>Design teams | Local data an previous studies |

# S10: RUBBLE CLEARANCE

In the Stabilization Phase, the planning for the long-term projects for the disposal of rubbles continues, as well as the activity of immediate clearance started in the Emergency Phase.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **S10.1: Temporary clearance** | Temporary clearance for emergency | Families and individuals<br><br>Neighbourhood committees<br><br>Municipality | Construction machines<br><br>Off-grid infrastructure<br><br>DIY tools |
| **S10.2: Assessment** | Assessment of size, methods, dump sites, transport, machines, workforce, and so on. | Municipality<br><br>Experts<br><br>Gov. | |
| **S10.3: Planning** | Preparing a holistic plan that matches with the regional masterplan to be designed | Municipality<br><br>Design team.<br><br>Construction companies<br><br>Gov. | Construction machines |
| **S10.4: Clearance** | Clearance | Construction companies | |

## S11:MUNICIPAL AND GOVERNMENTAL SERVICES

At this stage, the tasks of municipalities, government agencies, police, civil defence, and other urban services should resume. Therefore, an urgent plan is needed to repair essential facilities and vehicles, while also planning for long-term service options to ensure the continued functionality and sustainability of these services.

| Type of service | Actions | Actors / funders | Needs |
|---|---|---|---|
| **S11.1: Civil Defence Centres** | Repair of partly damaged centres.<br><br>Rebuild destroyed ones based on the new urban masterplans | Municipality<br><br>Municipality<br><br>Construction companies<br><br>Gov. | Intact infrastructure<br><br>Off-grid infrastructure<br><br>Construction materials<br><br>Construction machines |
| **S11.2: Vehicles/ equipment** | Purchase of new vehicles and equipment | Municipality<br><br>Gov. | |
| **S11.2: long term plan** | Preparing a long-term plan to be included in the urban masterplans | Municipality<br><br>Gov. | |

# LONG-TERM RECONSTRUCTION AND DEVELOPMENT PHASE (R)

# LONG-TERM RECONSTRUCTION AND DEVELOPMENT PHASE (R)

## STRATEGIC GOALS

The decisions and actions taken during the Long-Term Reconstruction and Development Phase have profound and lasting effects on the cityscape, regional tissue, and local lives. The Long-Term Reconstruction and Development Plan is a **COMPREHENSIVE FRAMEWORK**, proposing a roadmap, planning tools, and design proposals at various scales.

This stage is approached through an inherently multi-scale and interdisciplinary approach, aiming for planning and design outputs. The approach recognises that conditions at different scales are SYMBIOTIC and INTERCONNECTED, necessitating an interlaced design and planning process.

The proposed intervention scales encompass the **regional, urban, neighbourhood, and architectural levels**. By addressing these different scales, the plan reaches a holistic and sustainable result that secures the resilience and liveability of the living environment as a whole.

The pre-7th of October War assessment from Gaza municipalities indicated a series of issues to tackle urgently in the Gaza Strip, encompassing both urban and rural areas:

a. **Housing shortage and underperformance** The Gaza Strip was confronted with a significant deficit in housing units, stemming from the combination of destruction caused by prior wars, the natural demographic growth in a compounded region, poverty and lack of access to updated techniques and materials.

b. **Mobility and traffic congestion**: Before the war, the Gaza Strip, including all its urban centres, suffered from significant traffic congestion, worsened by limited public transportation and a lack of pedestrian-friendly zones. The presence of a major regional road, such as Salah Ed Deen Street, traversing through populated areas further compounds the issue and contributed to additional traffic congestion.

c. **Environmental pollution**: the GazaStrip suffered environmental challenges encompassing widespread air, land, and seawater pollution, largely attributed to actions and side effects from the military occupation and inadequate waste and wastewater management systems.

d. **Infrastructural deficiencies**: regional supplies suffered from severe insufficiencies, particularly aggravated by the dependency on Israeli sources for water, electricity, and fuel.

e. **Global marginalisation**: since 2006, Gaza has undergone a progressive and increasingly severe disconnection from the global arena of international politics, commerce, education and cultural exchanges. While inherently a political issue, proposed solutions are expected to integrate mobility and digital technologies to address this challenge effectively.

This set of problems is estimated to have significantly worsened with the war.

**The Phoenix Gaza Framework merges the deficiencies and expectations expressed by the municipalities in Gaza with a set of priority issues for the reconstruction process, indicating the following STRATEGIC GOALS as core to the Long-Term Reconstruction and Development Plan.**

# Long-term reconstruction and development PHASE (R)

The strategic goals were defined through the attentive, multi-disciplinary study of conditions on the ground before and during the ongoing war. The information relied on intertwining regional surveys and on-the-ground checks through the Phoenix Gaza local team of experts.

**The strategic goals set by the Phoenix Gaza Framework are:**

1. **Social cohesion, local agency and protection of citizens.**

- Reconstructing through **spatial criteria resilient to armed conflicts** and able to protect civilians in case of danger and crises .
- Reconstructing through methods that **mobilise local communities from the decision making to the implementation.**
- **Renovate spatial typologies** able to harmonise culturally rooted behaviours and habits and updated requirements .
- **Inclusiveness through polycentrism, urban mix, walkability and accessibility** as core criteria for reconstruction.

2. **Climate change resilience supported by urban and spatial redesign.**

- **Responsiveness to the sea level rise** extreme weather conditions in coastal and peri-coastal regions through landscape and territorial design.
- **Sustainable water management** and implementation of a consistent multi-scale system of **rainwater and wastewater** collection and reuse.
- **Multi-scale waste management** that consistently integrates **passive environmental techniques and landscaping** for the treatment of solid and liquid wastes.
- Environmental resilience and ***biodiversity*** through the implementation of **multi-scale green infrastructures and green corridors.**
- Improvement of health conditions and security of civilians through built tissue and environmental decontamination.

3. **Reduction of Co2 emissions and carbon footprint.**

- **Renewable energies and resilient power supply** networks through the integration of regional-neighbourhood-households scale devices.
- **integrated on-rail and sea transportation network** for the reduction of on-wheel transports through the implementation of
- Revitalisation of local economic tissue through **circular paradigm that integrating reuse, repairing and recycling.**
- Support to the ***sustainable economic chain*** that follows up goods from production to dismissal.

4. **Digitization of economy, public administration and teaching.**

- Expansion of **IT and material engineering for technologies** learning programmes.
- Support to **e-learning programmes** and online undergraduate and joint postgraduate programmes .
- **Digitisation of public archives and of services.**
- Support to **e-enterprises.**
- Enhanced accessibility to **digitised banking and currency** systems for privates, small enterprises and local administrations.

5. **Reconnection of the Gaza Strip to the international market and mobility.**

- Development of **Rafah area as main regional interchange** for air-wheel-rail-sea mobility hub.
- Redevelopment of **Yasser Arafat Airport.**
- Implementation of **commercial seaport on Rafah coastal area**.
- Development of **Rafah and Beit-Hanoun (Erez) Crossings** for the transit of passengers and goods.

# Long-term reconstruction and development PHASE (R)

## GROUNDING GOALS: THE DISTINCTIVE SPATIAL LAYOUT OF GAZA

The spatial translation of the strategic goals leverages the distinctive territorial layout of the Gaza Strip, characterised by a strong longitudinal directiveness crossed centrally by the Wadi Gaza.

The Gaza Strip features a central urbanised "strand" -developing along the Salah Al-Din Street, the main urban local development spine—, sided by two lateral strip-like areas, respectively bordering the sea and Gaza rurban inland. Both the sea and inland edges present an overall lower urban density and a higher concentration of green mixed with minor urban centres and sprawls, and specific micro-economies, climates, local sub-communities, and local practices.

The Wadi Gaza River area intersects the three longitudinal regions in their middle area with a specific sub-environment bearing its own peculiar characteristics in terms of environment, urbanisation, challenges, and opportunities.

The Phoenix Gaza Framework identifies the parallel sequence coastline > diffused city > rurban inland and the transversal corridor of the Wadi Gaza riverbed as a strategic asset for defining the future spatial development of post-war reconstruction. Maps illustrating the essential information analysed by the Phoenix Gaza team are included in this report in the ANNEX part at the end of this document.

<ANNEXES: (2) sea level and erosion scheme from our students, flooding map (3) water map, (4) infrastructure map, (5) green map, (6) pollution map land and sea, (7) infrastructures>

# THE REGIONAL SCALE

# THE REGIONAL SCALE

## THE BLUE & GREEN SPINE CONCEPT

The Phoenix Gaza "Blue & Green Spine" concept embraces and maximises the territorial vocations found on the ground, expressed in terms of spatial layout and socio-spatial dynamics and projects them into the future.

The Phoenix Gaza Framework's **long-term vision builds upon the territory's local vocations, reviewed and updated according to** the Framework's overarching criteria of **life-quality orientation, urban mix** and **local-rootedness.**

The long-term development pursues a **resilient** and **self-sustained** Gaza Strip, coherent and **consistent with indigenous**, **historically rooted trends**. It simultaneously fosters an environment conducive to prosperity and growth, responsive to withstand natural and man-made disasters and capable of meeting the future challenges and diversified needs of Gazan communities.

**The "blue spine"** functionsin in the local territorial metabolism as the liminal belt that connects the complementary maritime and mainland environments. It encompasses the waterfront area, the peri-coastal maritime zone the seashore area, the edge urbanised stripe between the beach and Al-Rasheed Road, and the first belt of built tissues lying along the Al-Rashid Road axis. As such, it characterises for a specific combination of opportunities and threats related to its environmental, micro-climatic and anthropic conditions.

The strategy for the Blue Spine focuses on integrating vocations and potentials related to sea-related economies, tourism, heritage, research and recreational sectors, harmonised in the environmental assets of the marine and coastal biosphere. It is also indicated to accommodate mobility and water management infrastructures (wastewater, desalination, prevention of coastal erosion from the change in sea levels and climate events).

**The "green spine"** works as the backbone for Gaza's climate resilience, biodiversity and food security. It comprises the rurban areas extending between the consolidated built-up central stripe and the Gaza Strip's borders. Its vocation builds upon its lower built density and loose built tissue, the dominant rural landscapes and the high-value agricultural lands. In pre-war conditions, this area was the vegetable basket of Gaza and the main source for agricultural production, with the highest green coverage in the Gaza region. As such, this area naturally stands as a strategic infrastructure for biodiversity, climate resilience, food security and agro-industrial economics.

Since the start of the war in 2023, this area underwent an intensified destruction of crops and arable lands by the Israeli army, and a concentration of ecocidal policies. Guidelines for the Green Spine set the recovery and strengthening of natural assets and the related agro-connected economics, electing this area for the implementation of infrastructures for the production of renewable energies, the sanitization of waters through passive, plant-based systems, waste management and recycling, and the integration of light tourism and recreation connected to the fruition of rural landscapes and farming.

The Wadi Gaza works as the Connector that bonds the maritime, urban and inland territorial systems, crossing transversally the three longitudinal spines. Its layout and positioning, natural features and pre-existing centrality as a socialising place in the nature elects the Connector for the potentiation as a core environmental and recreational area.

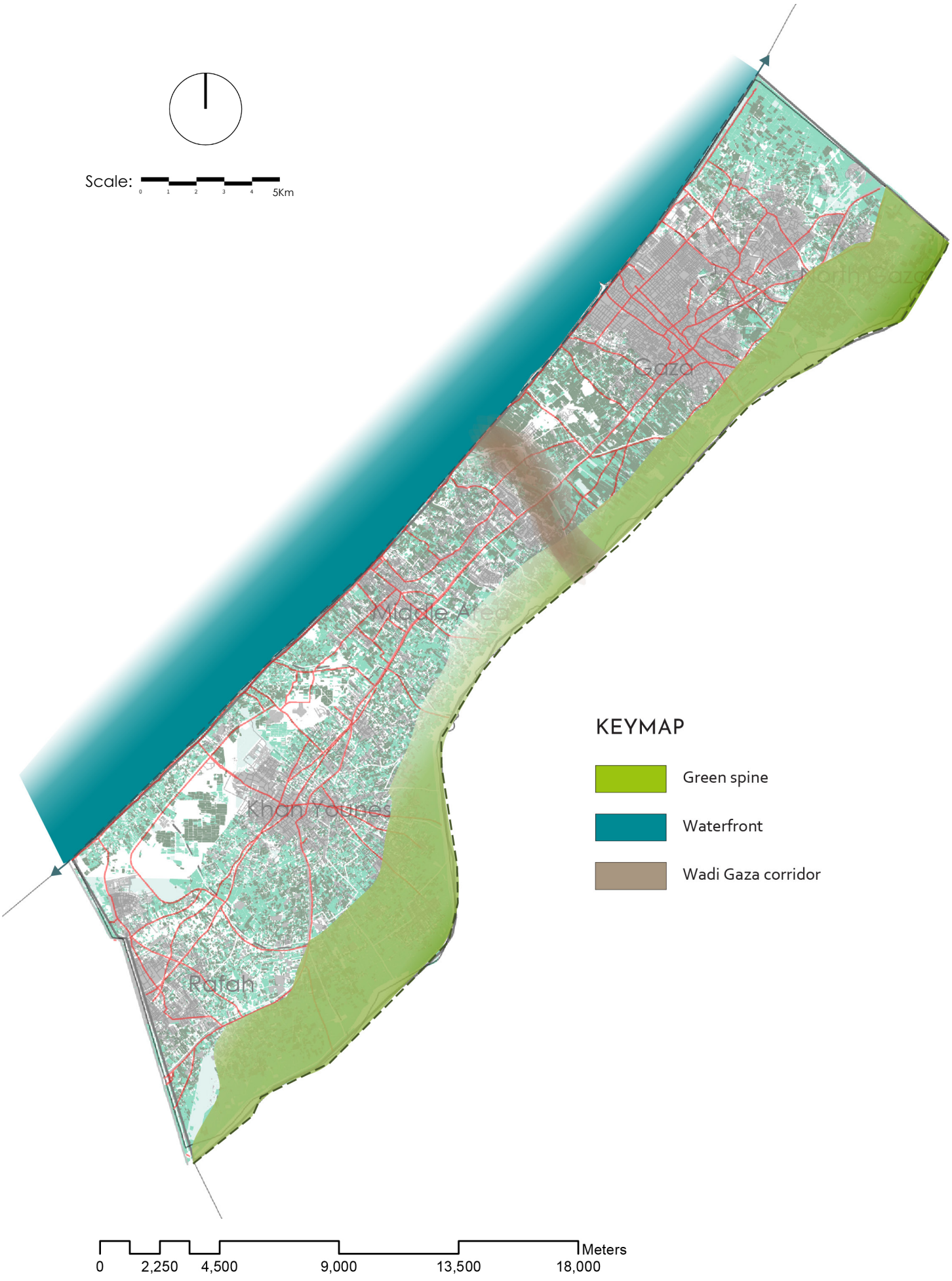
The Connector integrates natural reserves areas, public green for recreation, leisure and education, and public utilities serving the urban basin of Gaza City- Deir Balah - Khan Younis.

Comprised between the two spines, **the built-up area** is set to undergo the reconstruction, improvement and reorganisation of the built tissue and its facilities, with policies developed through closer collaboration with local municipalities and communities. The recovery of urban areas will be driven by the overall criteria of greening, distribution of facilities through the concept of the 15-minute city, walkability and cyclability and improvement of urban resilience to crises through fine-carpeted, micro-scaled intervention policies for urban horticulture, renewable energies, community shelters network, optimisation and balancing of dwelling tissues and open spaces.

1 https://forensic-architecture.org/investigation/ecocide-in-gaza

Long-term reconstruction and development
PHASE (R)

# THE BLUE & GREEN SPINE CONCEPT MAP


Scale:
0 1 2 3 4
5Km
North Gaza
Gaza
Middle Area
Khan Younes
Rafah
KEYMAP
Green spine
Waterfront
Wadi Gaza corridor
0
2,250
4,500
9,000
13,500
18,000
Meters

## Long-term reconstruction and development PHASE (R)

# A. CRITERIA FOR FOR THE REGIONAL SCALE MASTERPALN

The criteria that we provide here are standpoints, guidelines, parameters and measures that should be taken into account in the preparation of the Regional Masterplan for the Gaza Strip

## *R.C.1: WARTIME RESILIENCE*

The Phoenix Gaza initiative acknowledges the instability of the political environment in which this plan unfolds, as well as the ongoing colonial ambitions affecting Palestinian lands. The likelihood of recurring conflicts is recognized as a crucial factor to be addressed within the design and planning process. Consequently, this requires incorporating civilian resilience and survival as fundamental elements across all design scales and ensuring infrastructural adaptability within the Gaza Strip.
This approach starts from the regional scale planning where multiple strategies should promote public safety and disaster preparedness to enhance resilience against future man-made and natural disasters, most particularly future cycles of combat or siege. To this end, the regional masterplan should consider the following:

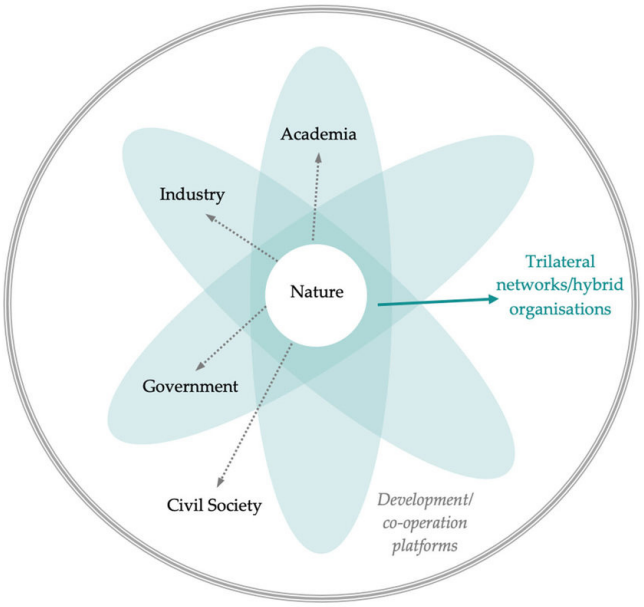
- **Decentralized Infrastructure**: Distribute essential public infrastructure (e.g., water, electricity, sewerage, telecommunications, and food storages) across urban centers. This reduces dependency on centralized systems, enhancing regional resilience.
- **Strengthen Vulnerable Areas**: Address weak points like open fields that can isolate communities during conflicts. Promote urban densification and carefully plan rural-urban fringes to create more cohesive, defendable spaces.
- **Mobility Diversification:** Expand and diversify transportation options to improve connectivity, increase accessibility, and ensure redundancy in movement pathways across the region.
- **Underground connectivity:** it would be feasible to envision an underground connecter that links all urban centers in the Gaza Strip.

## *R.C.2: LOCAL AGENCY AND SOCIAL COHESION*

The failures and success stories in post-disaster reconstruction experiences clearly highlight the importance of the local agency in achieving actual, durable, and sustainable results.
Coherently with the overarching principle of local rootedness that guides the whole approach of the Phoenix Gaza Framework, also long-term planning relies on the engagement, consultation and active contribution of local stakeholders and communities.

The Phoenix Gaza pursues this aim by following the Quadruple Helix model and thus coherently integrating the academic, institutional, entrepreneurial, and local community levels, adapted to the specific context of Gaza and the post-war reconstruction mission. This approach pursues the consistent integration of high-level decisions with bottom-up instances, building upon, scaling up and tailoring the Urban Living Lab paradigm to suit the Gaza-specific socio-spatial, economic, legal and political context.

Particular attention is dedicated to legal frameworks, property rights, spatial and environmental justice, and the balance between individual, collective and broader rights embedded in the rebuilding effort. The Phoenix Gaza indicates the consistent engagement of local communities as essential in actively assuring the protection of local rights, the balancing between instances and a more effective response, preserving the unique identity of local communities and their ties with built space and landscape, ensuring local instances are heard and collected in a harmonised way, and limiting corruption and the waste of resources for the reconstruction and revitalisation process.




Quintuple helix scheme.
Source: Arsova, Sanja & Genovese, Andrea & Ketikidis, Panayiotis & Pinyol Alberich, Josep & Solomon, Adrian. (2021). Implementing Regional Circular Economy Policies: A Proposed Living Constellation of Stakeholders. Sustainability. 13. 4916. 10.3390/su13094916.

# Long-term reconstruction and development PHASE (R)

## R.C.3: CIRCULARITY & ALL-AROUND SUSTAINABILITY

Complementary and consequent to the previous points is an approach that embraces the concept of resilience and all-around circularity, applied through the most updated approaches that harmonise policy making, planning, design and social activation to respond to the UN 2030 Sustainable Development Goals[2] and prepare the Gaza region for future global challenges.

The Phoenix Gaza pursues such goals through the **urban metabolism for the spatialisation of circularity**[3], developed with a strongly locally tailored and field-connected undercut.

The Urban Living Labs paradigm is the designated approach for implementation phases, which aims to mobilise local stakeholders through the Quadruple Helix model and monitor the impact at different scales through a stable set of indicators.


Circular Economy Model:less raw material, less waste, fewer emmisson
Source:European Parilament Research Service.

[2]https://sdgs.un.org/goals

[3] Amenta, L., Russo, M., & Van Timmeren, A. (2022). Regenerative Territories: Dimensions of Circularity for Healthy Metabolisms (p. 318). Springer Nature.

## *R.C.4: PRODUCTIVITY*

The Gaza Strip possesses significant assets that can serve as the foundation for creating a productive and self-reliant region, ensuring sustainable and resilient development. The Phoenix Gaza Framework identifies several key strengths and opportunities for the region, including:

1. Human Capital: A predominantly young population, a reliable and skilled workforce, high literacy rates, entrepreneurial spirit, and a cultural inclination toward IT and computer sciences.

2. Geographic and Environmental Assets: Strategic location, a rich coastal region, and abundant renewable energy potential from water, wind, and solar sources.

**High-Potential Sectors:**

The framework highlights the following sectors as pivotal to Gaza's regional productivity:

1. **Agricultural Development:** Harnessing Gaza's agricultural assets to ensure food security and drive economic growth.
2. **Coastal Development:** Utilizing the coastal region for tourism, fishing, and other marine-based industries.
3. **Renewable Energy:** Exploiting diverse sources of renewable energy to support sustainable infrastructure and reduce dependency on non-renewable resources.

**Strategic Actions:**

To maximize the potential of these assets, comprehensive policies, strategies, and implementation mechanisms must be developed. These should focus on:

1. Building on existing strengths to drive innovation and sustainability.
2. Orienting economic activities toward resilient and sustainable sectors.
3. Promoting financial feasibility through robust funding models and long-term economic sustainability.

# Long-term reconstruction and development PHASE (R)

**Financial Models**

Achieving these goals requires:

1. Establishing public-private partnerships to leverage investments and expertise.
2. Developing funding frameworks that ensure the sustainability of projects beyond the immediate post-crisis period.
3. Creating scalable and financially viable economic models that promote long-term growth and stability.

This integrated approach underscores the Gaza Strip's potential to transform its challenges into opportunities, fostering a resilient and prosperous future.

## *R.C.5: SUSTAINABLE MOBILITY*

The Phoenix Gaza envisions reducing reliance on car-based and wheeled transportation to lower $CO_2$ emissions, while enhancing inclusive and affordable connectivity. This approach emphasizes developing an integrated transportation system with a reduced environmental impact, promoting diverse mobility options, and encouraging green and collective modes of transport at various scales. Key logistical strategies include the consistent integration of rail and sea-based transportation. More details about the implementing sustainable mobility in Gaza Strip can be found in (R.3: Transportation)

## *R.C.6: HERITAGE PRESERVATION:*

Cultural heritage, encompassing tangible sites and intangible traditions, is a cornerstone of societal identity, collective memory, and cultural development. In the Gaza Strip, safeguarding and integrating these invaluable assets into national and regional strategies is both a responsibility and an opportunity to fortify cultural identity and stimulate economic growth.

**Key Elements of the Cultural Heritage Preservation Strategy**

1. **Comprehensive Regional Preservation Plan**

- Inventory of Heritage Sites: establish an inventory of Gaza's tangible and intangible cultural assets
- Preservation Zoning: after inventory is created preservation areas designated and protected.
- Integrated Urban Planning: then preservation sites are incorporated into a regional masterplan.

2. **Protection of Tangible Heritage sites**

The plan should adding the sites that need to be protected include:

- **Architectural and Archaeological Sites:** including ancient structures, such as mosques, historic markets, and ruins.
- **Culturally Significant Locations:** sites that hold historical, religious, or social importance.
- **Commemoration of Collective Memory:** memorials sites at locations like Al-Shifa Hospital, significant for their roles in key episodes of war and resilience.

3. **Integration with Sustainable Mobility system**

Link these sites with the broader transportation network, ensuring seamless access via public transport, pedestrian pathways, and bicycle routes.

4. **Policy Development and Capacity Building**

it is important to review and implement and enforce legal frameworks to protect cultural heritage sites from damage, neglect, or inappropriate development especially in the aftermath of war

5. **Local Expertise:**

Train local professionals in heritage preservation techniques, ensuring the skills required for sustainable conservation are cultivated within Gaza.

## Long-term reconstruction and development PHASE (R)

# B.COMPONENTS OF THE REGIONAL SCALE MASTERPLAN

A comprehensive regional masterplan should be developed for the entire Gaza Strip to coordinate reconstruction efforts and promote sustainable urban development. This plan outlines key components that should be incorporated into the regional masterplan for cohesive integration.

The regional master plan should transcend municipal boundaries to promote a unified, comprehensive development framework that benefits all localities. To achieve this, the master plan should include:

1. **Land Use and Zoning:** Define areas for residential, commercial, industrial, agricultural, and recreational purposes, along with strategies to manage urban sprawl and accommodate growth.

2. **Coastal Expansion:** Explore opportunities to extend Gaza's borders towards the sea by creating new islands or expanding the shoreline in specific regions, utilizing war debris as part of the process.

3. **New Urban Developments:** Plan for the establishment of new towns/neighbourhoods across various locations to address long-term housing shortages and meet post-war demands.

4. **Regulatory Updates:** Revise and align development regulations to reflect the criteria outlined in previous sections.

5. **Transportation Infrastructure:** Develop an integrated transportation system that ensures sustainable mobility within the Gaza Strip and establishes robust connections to the West Bank and international destinations.

**6. Economic Development Zones:** Identify and designate areas to foster economic growth and innovation

**7. Protection Zones:** Protect and maintain sites of cultural, natural and historical significance.

**8. Tourism and Cultural Zones:** Create zones dedicated to tourism and cultural activities to promote regional identity and economic diversification.

**9. Public Utilities and Infrastructure:** Strategically distribute essential utilities and infrastructure to ensure equitable access and functionality.

**10. Environmental Protection:** Establish areas dedicated to preserving natural ecosystems and promoting sustainable practices.

**11. Disaster Risk Management:** Designate zones and strategies for mitigating and managing risks related to natural and human-made disasters.

**12. Future Expansion:** delineate future expansion zones for each locality.

# Long-term reconstruction and development PHASE (R)

## C. SECTORS AND ACTIONS:

### R.1: HOUSING

As mentioned earlier, housing issue is pressing and in large deficiency even before the war erupts. With the large-scale need for housing, the regional plan should perceive multiple strategies to overcome this issue. As such, on housing sector the plan suggests the following:

1. **Housing Schemes:** Proposing diversified housing schemes across various locations, structured as housing cooperatives managed either collectively or by municipal authorities. These schemes could be further strengthened by establishing social housing initiatives to reduce the monopolistic tendencies often seen in private sector and corporate housing developments.

2. **New towns proposals:** creating new towns on artificial islands in the sea can significantly solve the housing problem while sparing the agricultural landscape.

3. **Reconstruction of neighbourhoods:** reconstruction of previous housing projects and small towns should be prioritised and adjusted to accommodate larger number of populations. As such, neighbourhoods need to be redesigned.

4. **Building code adjustment:** Aimed at densifying urban centres, these adjustments would focus on maximizing land utilization in housing projects. Recommended changes include loosening regulations on parcel merging, increasing allowable building heights, revising spatial dimension standards, and implementing other measures to optimize land use.

5. **Gaza Postwar Homes Council:** we encourage the establishment of Gaza's Postwar Homes Council which should focus on research and development of different homes typologies that the Gazan people require.

## R.2: HEALTHCARE

On a regional scale, the reconstruction and redevelopment of the healthcare system should adopt a decentralized approach, distributing health services evenly across the Gaza Strip to reduce transportation needs. This plan envisions the following steps:

1. **Rebuilding and Rehabilitation:** Establish a plan to reconstruct and rehabilitate existing facilities, while identifying those that can be relocated to optimize resource allocation and connectivity.

2. **Service Redistribution:** Redistribute health services to under-served areas outside urban centres, ensuring broader access to healthcare.

3. **Mental health and post-trauma healing centres:** Emphasis should be placed on integrating mental health and post-trauma facilities to support psychological recovery and healing. The regional plan should identify optimal locations for establishing or rehabilitating these centres, ensuring they effectively serve the population's post-conflict recovery needs. Site selection should consider both current population distribution and future demographic projections.

4. **Connectivity:** Ensure efficient connectivity and mobility to health facilities, enabling accessible and reliable transportation options for all residents to reach healthcare services.

5. **Decentralized Medical Storage:** Develop multiple decentralized medical storage facilities, ideally underground where feasible, to improve accessibility and enhance resilience in emergency situations.

# Long-term reconstruction and development PHASE (R)

## R.3: TRANSPORTATION:

Addressing the ongoing mobility challenges in the Gaza Strip is critical. The regional plan must develop an integrated transportation system that alleviate traffic congestion and enhance mobility in urban centres and across the strip through establishing efficient public transport and pedestrian-friendly infrastructure. Smooth and inclusive mobility options not only enhance quality of life but also stimulate economic activities, enrich social and cultural interactions, and alleviate resilience capacity during times of war.

**Strategic projects for connectivity:**

1. **Redesign and Improvement of Salah Eddeen Street:** Transform Salah Eddeen Street into a major **public transportation** corridor running from North to South. This spine should be intended to incubate **urban regenerations schemes** along the transportation corridor.

2. **Repurpose AL-Rasheed Street** into a vibrant seaside development hub, fostering economic activity and cultural exchange. This strategy aims to connect urban centres along the coastline, revitalising the seaside front and enhancing its productivity.

3. **Creation of a New Eastern Hinterland Street:** Construct a new arterial road in the eastern hinterland, linking agricultural lands from Beit Hanoun to Rafah. This road will facilitate mobility for agricultural, industrial, and international movements, supporting economic development and connectivity across the region.

4. **Establishment of a Train Line:** Introduce a heavy train line connecting Northern Gaza to Rafah Crossing, facilitating efficient transportation and movement of goods and people. This railway infrastructure can be situated either underground beneath Salah Eddeen Street or along the eastern borders of the Gaza Strip, enhancing connectivity and accessibility for residents and businesses alike.

5. **Electric tramway network:** a regional connecter line passing through old railway line crossing all cities and from which other urban connector lines distribute inside urban centres. Another line can be established across the Al-Rasheed Street to enhance seaside development.

6. **Sea Taxi:** Integrating sea-based transportation, such as a sea taxi system, into the urban mobility framework offers several strategic benefits for economic development, tourism, and transportation efficiency. A sea taxi system provides a practical and scenic alternative to traditional road-based transportation, reducing reliance on congested road networks and it ensures equitable access to the waterfront, encouraging greater public engagement with the sea as a shared resource.

## R.4: ECONOMY

A general policy framework that envisions a social economy for Gaza's reconstruction is outlined in section number 180. The regional master plan should incorporate this framework into its spatial development strategies. The regional master plan must view the economic sector as a key tool for social recovery, aiming to engage all social classes in the production and business sectors. This can be achieved through various strategies, including but not limited to:

1. **Local Production Support Policies**
2. **Enhanced Connectivity and Transportation**
3. **Diversification of Modes of Production**
4. **Financing of Local Businesses**

# Long-term reconstruction and development PHASE (R)

## R.5: EDUCATION

The development of the education sector is a key to recovery and productivity and it must be a cornerstone of Gaza's regional spatial plan, addressing the diverse needs of its population while fostering resilience and long-term productivity. The educational recovery plan should have a comprehensive educational framework that covers:

- **All Levels of Education:** The plan must consider pre-school, primary, secondary, and higher education, ensuring access to quality learning at every stage.

- **Extracurricular Integration**: Incorporate extracurricular activities into social programs, utilizing educational facilities as community hubs for learning and engagement.

Additionally, special attention should be paid to reestablish the educational institutions as resilient and healing learning environments through:

- **Extended School Hours:** Design schools to accommodate extended hours, allowing students to spend more time in secure and productive environments.

- **Trauma-Informed Design:** Adapt building regulations to create schools that foster a sense of safety, well-being, and emotional recovery. Designs should transform schools from places associated with trauma into spaces of healing and resilience.

Furthermore, to enhance Gaza's socio-economic prospects, specialized educational facilities are crucial:

- **Agricultural College:** the purpose for this school is to serve as a hub for advanced farming practices, research, and innovation. As such it includes:

+ Agricultural research centres focusing on crop studies, soil management, and sustainable farming methods.

+ Farmer training programs providing essential skills and market knowledge.

+ Veterinary clinics offering livestock and poultry healthcare services.

- **Vocational Schools:** the purpose of this is to provide practical training in crafts, light industries, and high-tech fields to equip students with market-relevant skills. This school will empower individuals to pursue fulfilling careers while driving economic growth, innovation, and self-sufficiency in Gaza. Divers training areas can be included in this school based on pressing needs and potentiality for growth, for example:

+ Traditional crafts, including woodworking and metalworking.

+ High-tech sectors such as robotics and advanced manufacturing.

## R.6: POWER GENERATION:

It is imperative to reconsider the power generation system in Gaza and move towards self-sufficiency and more sustainable modes of power generation. Building on previous experiences, the system should consist of:

1. **Decentralized power plants:** reconstruction of multiple power plants that feeds all regions of Gaza without centralization of production and distribution.

2. **Central Power plant rehabilitation:** rehabilitate the per-war central plant that it can feed specific locations in its region.

3. **Alternative Power Generation Systems:** it is important to activate and alternative power generation system based on:

- **Solar Energy:** Implement solar power generating plants on a national scale, utilising open areas, green belts, building rooftops, and streetlights. This widespread adoption of solar energy will reduce reliance on the central plant and promote energy independence.

- **Wind Energy:** Install coastal wind generators to harness wind energy efficiently, offering an additional renewable energy source that complements solar power.

- **Waste-to-Energy (WTE) Plant:** Consider integrating a WTE plant into the system, enabling the conversion of waste into electricity as a sustainable energy solution.

- **Sand batteries:** known also as sand-based energy storage systems, present a promising solution for electricity preservation. This technology can be deployed at both domestic and neighbourhood scales, enabling residents to contribute to power generation and storage through solar systems, thereby facilitating communal energy use.

By incorporating a mix of centralised and alternative power generation systems, Gaza can enhance energy resilience, reduce dependency on external sources, and ensure reliable access to electricity, particularly during emergency situations.

# Long-term reconstruction and development PHASE (R)

## R.7: WASTE MANAGEMENT

Effective waste management is essential in all urban centers within the Gaza Strip. Therefore, it is imperative to implement a comprehensive solution for waste management. Various initiatives focusing on recycling and waste sorting have already been established in Gaza, highlighting the need for a holistic system that encompasses the entire waste management process, from sorting at households and public facilities to final treatment.

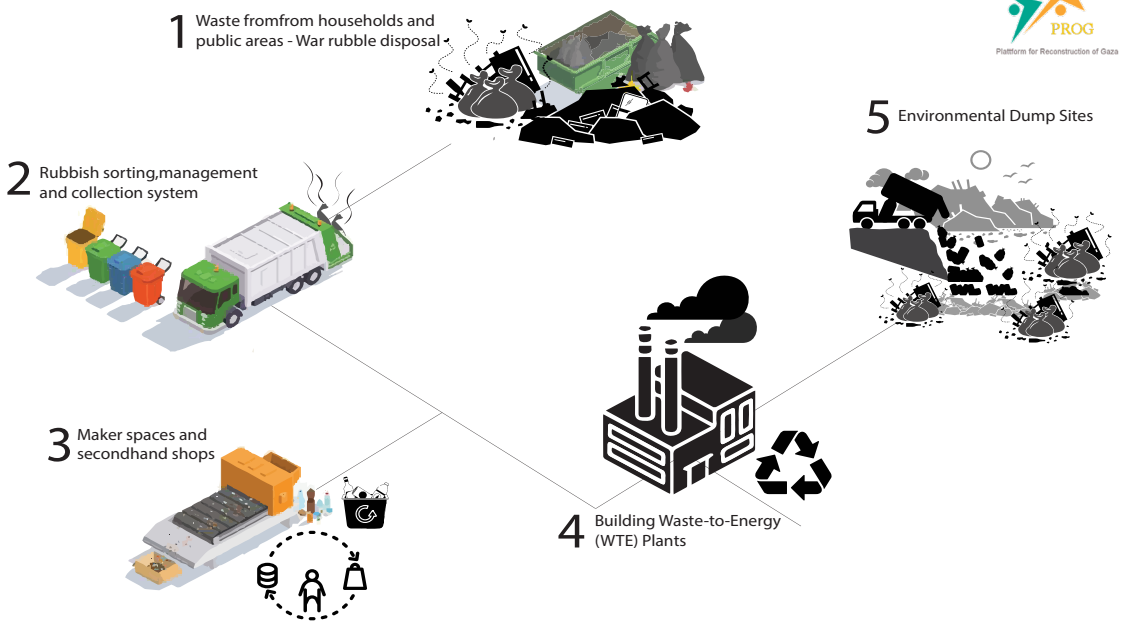
**Proposed waste management solutions:**

1. **Waste Sorting, Management, and Collection System:** Implement a system for sorting, managing, and collecting waste from households and public areas to ensure proper disposal and recycling.

2. **Building Waste-to-Energy (WTE) Plants and Environmental Dump Sites:** Construct WTE plants to convert waste into energy, reducing the volume of waste sent to landfills and providing a renewable energy source. Additionally, establish environmental dump sites equipped with proper containment measures to safely dispose of non-recyclable waste and prevent environmental pollution.

3. **Maker Spaces and Second-hand Shops:** Integrate maker spaces and second-hand shops into the waste management system to encourage recycling and reuse of materials. Municipal refurbishing and maintenance facilities can further support these efforts by providing resources and expertise.

4. **War rubble disposal and reuse system:** Establishing a systematic approach to manage the collection, reuse, and disposal of large-scale amounts of rubbish and rubbles resulting from war is imperative. Various methods for reuse can be implemented, but the system should begin by envisioning both rapid short-term clearance and a long-term plan for reuse or disposal.




WASTE MANAGEMENT

## R.8: WATER INFRASTRUCTURE:

Water security in the Gaza Strip presents a critical challenge that predates recent hostilities. Implementing both natural and engineered systems is imperative to enhance access to potable water. While recognising the need for a comprehensive approach, our initial recommendations include:

1. Conducting a comprehensive study to assess ground and seawater aquifer conditions and explore natural purification methods.

2. Water Management and Distribution System should be established based on the previously mentioned study.

+ **Establishing large-scale desalination plants** as a primary source of clean drinking water, recognising their pivotal role in addressing immediate needs.

+ **Establishing decentralized water desalination network** through building neighbourhood-scale units distributed in residential quarters.

+ **Constructing a north-south water carrier** to facilitate efficient distribution of water resources.

+ **Repair and development of water grid** to for minimising water wastage.

+ **Digging and opening of water wells** in multiple locations.

3. Developing a climate-responsive strategy to mitigate climate change impacts, incorporating initiatives such as afforestation and land purification schemes.

4. Establishing wastewater treatment facilities to harness treated wastewater for agricultural purposes, thereby mitigating pollution and maximising resource efficiency.

# Long-term reconstruction and development PHASE (R)

## R.9: SEWAGE TREATMENT

A comprehensive Regional Sewage Treatment System should be developed for the Gaza Strip, followed by the creation of urban-scale plans that align with the broader regional strategy. These plans should focus on ecosystem restoration and purification while ensuring the implementation of sustainable mechanisms. The regional sewage treatment system should prioritize the reconstruction and modernization of existing infrastructure to address both immediate needs and long-term sustainability. In light of the challenges posed by widespread destruction, high population density, and limited resources, the plan must be designed to be resilient, adaptable, and efficient.

**The following outlines key components of this plan:**

1. **Assessment and Rehabilitation of Existing Infrastructure:** conducting a thorough assessment of the current state of the sewage infrastructure to identify heavily damaged or destroyed components. And then priority should be given to the repair of critical sewage lines and treatment plants to restore basic sewage services to urban and rural areas as quickly as possible.

2. **Decentralized and Modular Approach:** Given Gaza's infrastructure challenges, modular, small-scale sewage treatment plants could be deployed in different regions. These systems can be quickly set up and adapted to local needs.

3. **Upgrading Treatment Facilities:** Upgrade or build new sewage treatment plants that use efficient, low-energy technologies, like membrane bioreactors (MBR) or constructed wetlands of phyto-depuration system, which are environmentally friendly and cost-effective.

4. **Flood Prevention and Resilience:** Integrate stormwater management into the sewage system to prevent flooding and overflow during heavy rains. This could include the construction of retention ponds and the redesign of drainage networks to manage both stormwater and sewage.

# R.10: RUBBLE CLEARANCE

A regional master plan for rubble clearance in Gaza must be comprehensive, inclusive, and socially context-sensitive. It should address the potential presence of human remains beneath the rubble, the extensive destruction, limited resources, and the urgent need for rebuilding.

The plan aims to retrieve human remains respectfully, ensure safe and efficient rubble removal, minimize environmental and health risks, and recycle or reuse rubble. It also seeks to promote community involvement, create economic opportunities, and align with long-term reconstruction and sustainability goals.

**Key Components**

1. **Assessment and Mapping:** A thorough assessment of rubble volume, locations, and types should be conducted. Rubble must be classified for reuse, recycling, or disposal, with a general strategy for sustainable handling.

2. **Institutional Coordination:** Establish a government-led rubble clearance office with representatives from municipalities, civil defence, UN agencies, NGOs, and private stakeholders. Safety protocols and expert teams should be prioritized.

3. **Community Engagement:** Train and involve local communities in rubble collection and sorting, equipping them with tools and protective gear. Provide incentives to encourage active participation.

4. **Plan the rubble clearance:** The rubble clearance plan should identify priority zones, designated routes, and disposal destinations. Crucially, these destinations must align with an overarching strategy for recycling and repurposing the rubble. Potential reuse options include:

- **Seaside Expansion:** Utilize rubble to extend the shoreline or construct new offshore islands.

- **Recycling Facilities:** Classify materials suitable for recycling, such as furniture, electronics, and textiles, for further processing.

- **Waste-to-Energy (WTE) Facilities:** Establish WTE facilities to handle large volumes of materials that can be converted into energy resources.

# Long-term reconstruction and development PHASE (R)

**Operational Phases**

**Phase 1: Immediate Clearance:**Focus on critical areas such as roads, hospitals, schools, and shelters. Clear debris blocking emergency access and restore essential services.

**Phase 2: Systematic Clearance and Recycling:**Create temporary sorting and storage sites. Recycle usable materials, such as crushed concrete, and safely dispose of hazardous waste at designated locations.

**Phase 3: Long-Term Management:**Establish permanent recycling facilities and adopt policies supporting sustainable construction with recycled materials.

## R.11: MUNICIPAL AND GOVERNMENTAL SERVICES

Municipal and governmental services facilities and structures should be assessed and allocated at the regional level to ensure their seamless incorporation into the diverse urban masterplans across the Gaza Strip.

This comprehensive approach allows for a holistic examination of infrastructure needs and priorities, taking into account regional considerations such as connectivity, accessibility, and resource allocation. By evaluating these projects on a broader scale, urban planners can better coordinate their implementation with local development plans, optimize resource utilization, and enhance overall efficiency and effectiveness in infrastructure development across the region.

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## R.12: GREEN INFRASTRUCTURE

To enrich the living environment and foster well-being, it is essential to incorporate green spaces and recreational areas into both urban and rural landscapes. Green zones and belts, comprising agricultural land, parks, and preserved wild areas, offer a multitude of benefits:

- **Air and Soil Purification:** Vegetation in green spaces helps to filter pollutants from the air and improve soil quality, enhancing overall environmental health. Particularly, Eucalyptus and moringa oleifera near dump sites or septic tanks can help in achieving this goal.

- **Food Production:** Gaza's fertile land is essential for food production, economic recovery and self-sufficiency. Thus, preserving rural areas and limiting urban sprawl is crucial.

- **Healing and Mental Well-being:** Access to green spaces has been linked to reduced stress levels, improved mental health, and increased feelings of relaxation and well-being.

- **Ecosystem Stability:** Green spaces contribute to the preservation of biodiversity and the stability of ecosystems, providing habitats for wildlife and supporting ecological balance.

- **Recreational and Entertainment Opportunities:** Green areas offer open spaces for recreational activities such as picnics, sports, and leisurely walks, fostering community engagement and social interaction.

- **Regeneration of the Landscape:** Greenery adds aesthetic value to the environment, enhancing the visual appeal of urban and rural areas and contributing to a sense of place and identity.

# Long-term reconstruction and development PHASE (R)

## Strategic green projects

1. **Eastern Borders Green Belt:** This area could primarily be preserved as rural and agricultural Land, providing a buffer zone along Gaza's eastern borders. Other specific areas can be included and designated as protected areas ensuring that they remain undeveloped and productive for farming, particularly in regions known for crops like strawberries and flowers (e.g., Beit Lahia).

2. **Wadi Gaza:** Recognised as a naturally preserved area, Wadi Gaza is an important ecological and recreational resource that should be safeguarded and maintained.

3. **Phyto-Purification Parks:** Establish phyto-purification parks to the East of various urban centres. These parks utilise plants to filter and cleanse wastewater, contributing to environmental sustainability and enhancing the quality of local water resources.

4. **Rebuild rural infrastructure** to support agricultural productivity, without converting farmlands into residential or industrial use.

5. **Landscape restoration of high-value agricultural zones:** Special focus on recovery and restoration policies for high-value cultivated landscapes in the agricultural areas in multiple localities for their inherent value as agricultural production, cultural significance of the agro-anthropic landscape, and biodiversity.

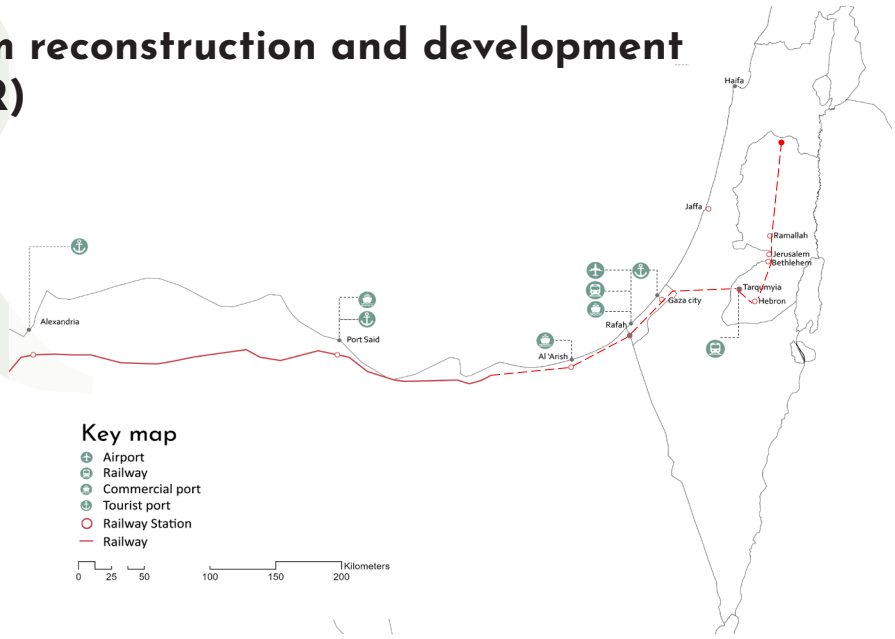
## R.13: EMBRACE THE SEA

The underdeveloped coastal areas of Gaza offer a significant opportunity for expanding urbanization towards the sea and employing the potential of seaside opportunities. These include the establishment of entertainment zones, marine science research facilities, fisheries, fishing industries, seaside sports facilities, surfing destinations, and water transportation networks connecting urban centres, as well as seawater desalination plants.

This strategy is expected to yield multiple benefits, including the promotion of seaside tourism developments, fostering economic growth, generating employment opportunities, and supporting the people's right to their city. Additionally, it involves utilizing sand dunes for various purposes and sparing more space for agricultural activities, thereby promoting sustainable land use practices. Furthermore, the exploitation of wind power for electricity generation is proposed, contributing to renewable energy initiatives and reducing reliance on traditional power sources.

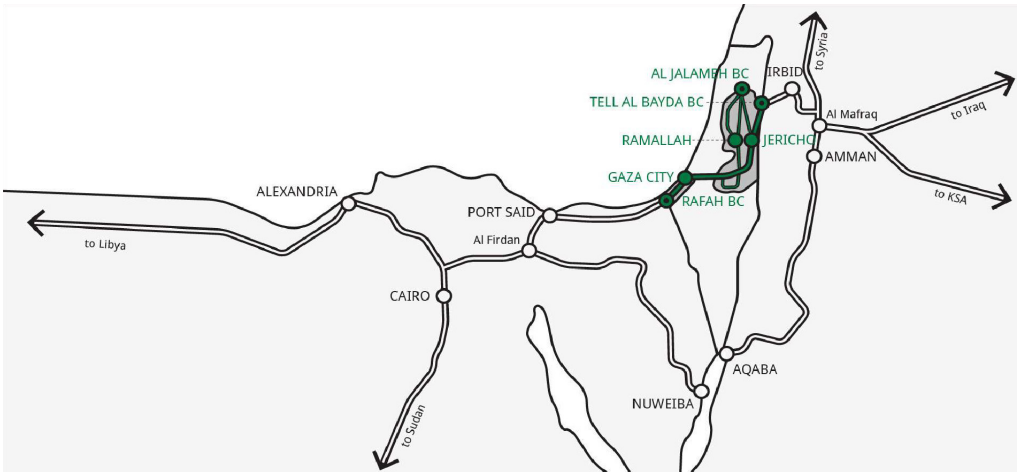
The regional plan should envisage land expansion towards the sea, either by extending the coastline, reinforcing the existing shoreline, or even creating artificial islands from the rubble generated by the ongoing conflict.

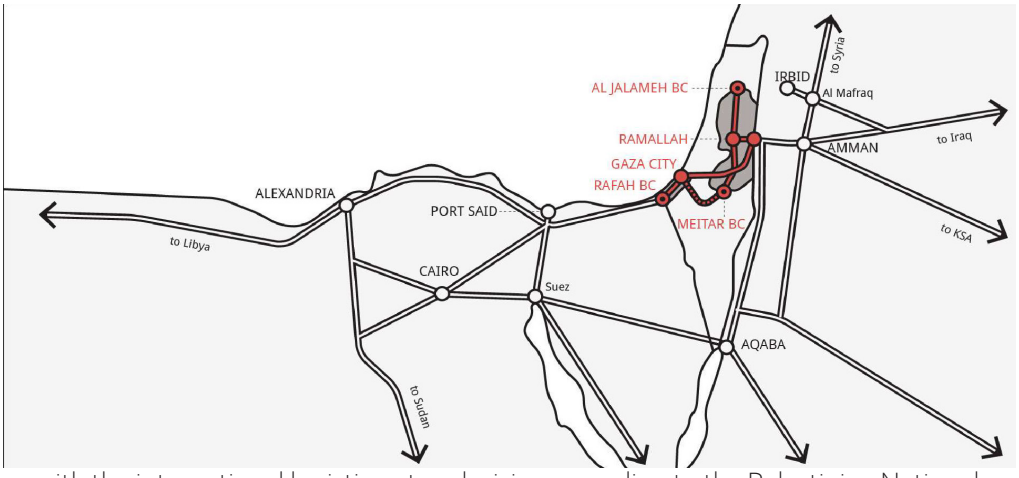
# Long-term reconstruction and development PHASE (R)




## REGIONAL CONNECTIVITY DIAGRAM

Palestine integrated in the international logistics main network: a scheme for the integrated sea+air+rail-based network. The scheme envisions the suggested reconstruction of the pre-existing railway that connected Gaza region with Egypt.

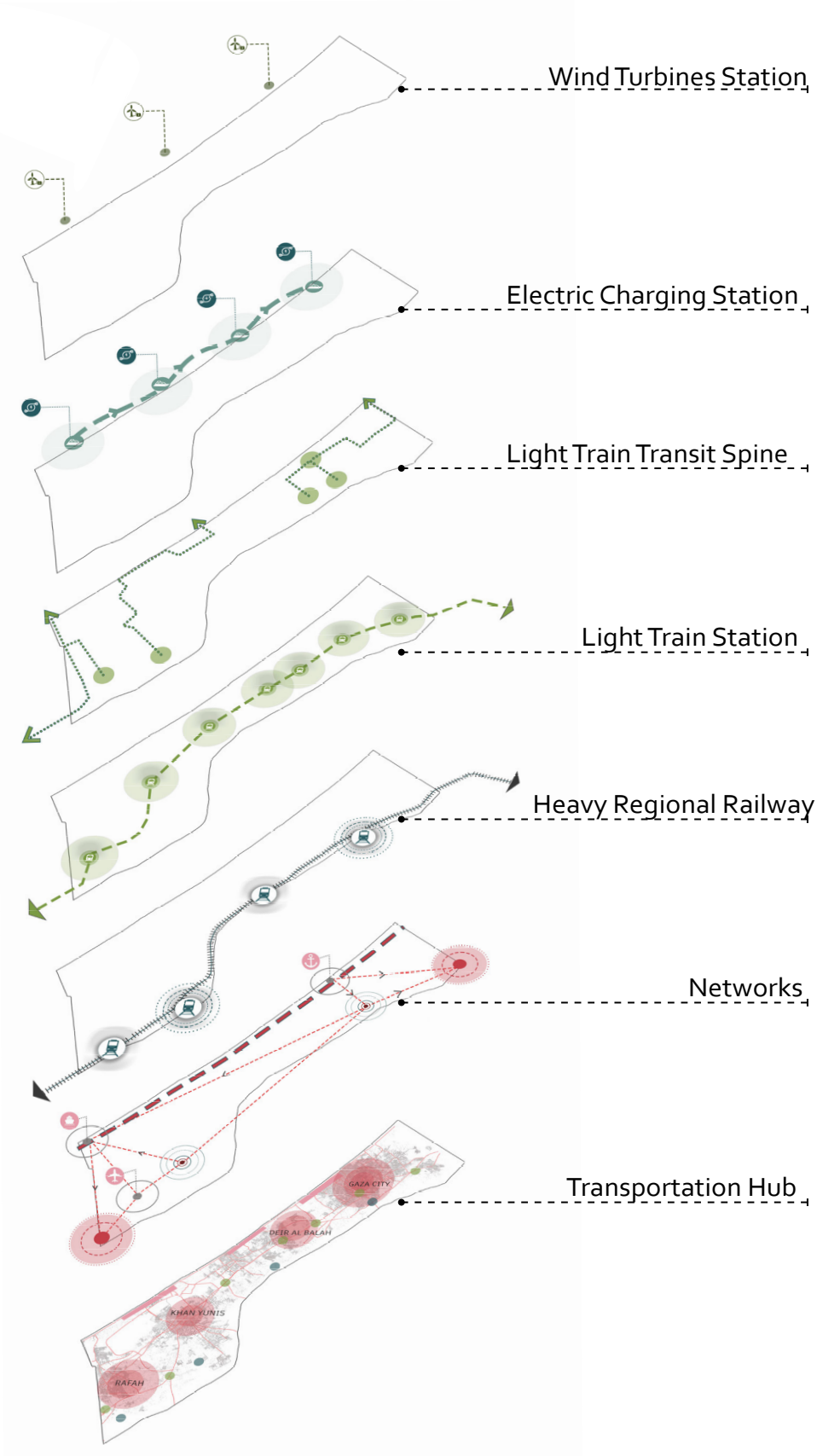


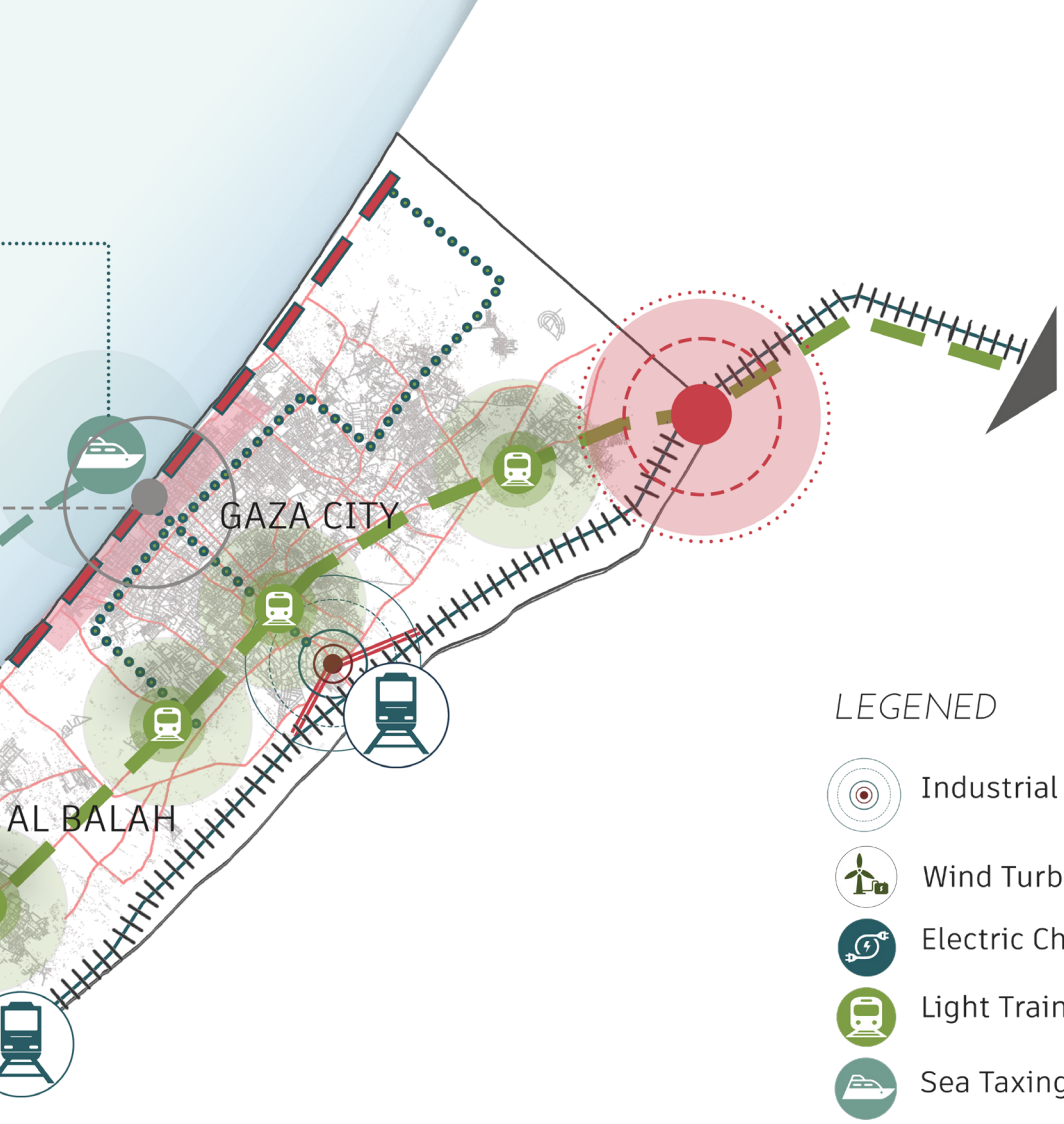

Connection with the international logistic network vision according to the Palestinian National Authorities, "Road and Transportation Master Plan of West Bank and Gaza Strip", 2013-16.[4]

[4]https://www.systematica.net/project/road-and-transportation-master-plan-of-west-bank-and-gaza-strip/#:~:text=The%20Master%20Plan's%20general%20proposal,the%20realization%20of%20new%20and

# INFRASTRUCTURAL PROJECTS DIAGRAM



# Long-term reconstruction and development PHASE (R)




## LEGENED

- Industrial Zone
- Wind Turbines Station
- Electric Charging Station
- Light Train Station (LRT)
- Sea Taxing Stop Station
- Heavy Regional Railway
- Port
- Fishing Port
- Airport
- Trnasportaion Hub

- Internal Streets Network
- Regional Roads Network
- Al Rashid St: Cars and Biks
- Light Tram Transit
- Light Train Transit Spine (LRT)
- Heavy Regional Railway
- Costal Taxing Line
- Building With Provisions Area

0 2,250 4,500 9,000 13,500 18,000 Meters

# Long-term reconstruction and development PHASE (R)

## Actions, actors and needs:

| Actions | Actors | Needs | Notes |
|---|---|---|---|
| Design Phase | | | |
| Identifying pre-war regional problems and priorities | Government (related ministries)<br><br>Municipalities | Pre-war plans, reports, and research findings | Workshops are needed to establish working groups for multiple sectors.<br><br>Teams can start now |
| Provide pre-war latest development plans | | | |
| Establish local planning team | Government and municipalities | | Local teams will join larger collaborative teams in later stage |
| Regional DNA | Experts and trained workers | Training sessions<br>International volunteers | Actions can work in parallel; no sequence is required.<br>Teams can start now. |
| Statistics of population | Latest pre-war statistics | | |
| Sectorial statistics (agro, indu, tour, trade, etc… | Government (related ministries)<br>Municipalities | | |
| Consultations and community participation | Government<br><br>Municipality<br><br>Neighborhoods' committees<br><br>Families<br><br>Local associations (engineers association, chamber of commerce, and so on) | Round table discussions and workshops. | In this scale, community participation may be limited to university professors, researchers, families' leaders and political figures cultural operators, sport clubs and associations |

| Actions | Actors | Needs | Notes |
|---|---|---|---|
| Design Phase | | | |
| Preparation of the vision | Design teams, government, resistance, and municipalities | | International experts are needed. |
| Allocating specialized multi-disciplinary planning and design teams | Municipality | Providing planning and design principles.<br>Agreement with design teams | This document provides a starting point for such principles.<br>Local design team joins the expanded disciplinary design teams |
| Review of the latest updates on pre-war master plans and main urban problems in the city | Design teams. | Official reports, maps and statistics<br>Literature review (socio-spatial) | |
| Preparing regional masterplan<br>Outline general urban masterplan guidelines.<br>Preparing schematic design for national projects. | Design teams. | Urban planning and design Experts.<br>Municipal and governmental data. | |
| Implementation phase | | | |
| Agreements are signed.<br><br>Project management report (stages, needs, funds, etc.)<br><br>Recruitment of local team<br><br>Implementation starts | Government<br><br>Municipality<br><br>Local /International construction companies | Workforce<br><br>Machines<br><br>Construction vehicles<br><br>Equipment<br><br>Building Materials | |

## Long-term reconstruction and development PHASE (R)

# URBAN SCALE

The urban masterplans should be prepared for each urban centre. They will offer recommendations for addressing the reconstruction of areas that have been destroyed, while also presenting a futuristic vision for the city's development. It includes proposals for new infrastructure projects, such as transportation networks and utilities, as well as plans for creating new neighborhoods to accommodate population growth and enhance liveability. The masterplan aims to guide the city's reconstruction and growth in a sustainable and resilient manner, taking into account the unique challenges and opportunities created by war destruction.

# A. CRITERIA FOR STABILISING PHASE

The criteria that we provide here are standpoints, guidelines, parameters and measures that should be taken into account in the preparation of master plans for each urban center. So, they are the theoretical components and background for the physical interventions proposed in the master plan. Hence, these criteria should be reflected in the proposed components and designs of each master plan.

## *U.C.1: WARTIME RESILIENCE*

On urban scale each city should rethink its wartime resilience capacity as it fits most with its own built and environmental fabric. Cities should incorporate public safety and disaster preparedness into the urban planning process to enhance resilience against future man-made and natural disasters, most particularly future cycles of combat or siege. To this end, the following recommendations should be considered:

- **Decentralization of Urban Services:** Distributing public services including emergency centers, hospitals, fire defense, schools, markets, and community centers across the city while ensuring proper connectivity with mobility options can enhance accessibility to essential services, particularly during times of crisis.
- **Addressing Weak regions:** Open fields often serve as weak points and can divide communities during conflicts. Urban densification areas and rural-urban fringes can be utilized in specific locations to address this issue.
- **Promoting Mixed-Use Areas:** Mixed-use areas, combining residential, commercial, and recreational functions, can provide residents with more amenities and services, enhancing their resilience during war times by offering their needs within walking distance.
- **Flexible Land Use Regulations:** Implement flexible land use regulations that allow for adaptive reuse of buildings and spaces in response to changing needs and conditions during conflict cycles.
- **Evacuation plan:** each municipality should prepare emergency plan including public shelters, safe zones and evacuation routes to mitigate risks during times of war.
- **Building Codes amendment:** Each municipality should update building regulation codes to include safety considerations.

# Long-term reconstruction and development PHASE (R)

## *U.C.2: LOCAL AGENCY AND SOCIAL COHESION*

Building upon the Quadruple Helix model that The Phoenix Gaza pursues, we believe that local agency and supporting social identity and cohesion should be crucially and sufficiently integrated in local urban masterplan for each city and this can be reinforced through:

**1. Participatory Planning:**

Ensure public and civic engagement in decision making in the city planning processes to reflect local needs, preferences, and concerns, which can enhance social acceptance and legitimacy of the plan. This should be pursued through multiple workshops that engage local stakeholders and community leaders.

**2. Preserving Spatial Identity and private properties:**

The Gaza Strip comprises diverse built environments with distinct identities. Urban masterplans must prioritize the conservation of place identity, refraining from substantial alterations that could undermine each location's intrinsic significance and character. Concurrently, it is crucial to uphold private property rights and incorporate urban planning initiatives that safeguard the social fabric, thereby ensuring a harmonious balance between preservation and development.

**3. The right to the city:**

"The right to the city" is a fundamental principle in urban development, ensuring equitable access to urban spaces, facilities and amenities. This includes preserving access to seaside areas like the corniche, which serve as vital hubs for recreation, tourism, and cultural activities. Upholding this right foster inclusive and sustainable urban environment, supporting the diverse needs and aspirations of residents, particularly in coastal cities like Gaza.

## 4. Al-Aouneh concept

Implementing collective rebuilding  activities for both private and public spaces can be highly beneficial during reconstruction periods. The Al-Aouneh concept, also known as mutual aid, as described by Peter Kropotkin, plays a vital role in community evolution and fostering healthier social relationships. It serves as an alternative to competition and selfishness commonly observed during reconstruction efforts.

Al-Aouneh initiatives can be organised through neighbourhood committees and social movements, with the committee overseeing and approving collective actions and mutual support activities. The social fabric in Gaza supports the mobilisation of such groups and methodologies; however, proper organization and provision of resources are essential to ensure their effectiveness.

**Volunteering inventory:**
In order to bolster community engagement and support the rebuilding efforts within the Gaza Strip, and to leverage diverse international volunteer opportunities, the establishment of a volunteering inventory is proposed. This inventory would facilitate the recruitment of volunteers from various global regions, allowing them to apply and participate in volunteering initiatives within the Gaza Strip for specific durations. Volunteer activities may encompass a range of endeavours including construction, education,

# Long-term reconstruction and development PHASE (R)

## *U.C.3: CIRCULARITY & ALL-AROUND SUSTAINABILITY*

Achieving environmental sustainability in Gaza's reconstruction requires embedding green practices across all rebuilding efforts. Urban masterplans and building regulations should incorporate the following priorities:

1. **Renewable Energy Integration**
Utilize solar, wind, and other renewable sources for power generation.

2. **Ecosystem Restoration**
Rehabilitate natural habitats and green spaces.

3. **Effective Waste Management**
Implement recycling programs and sustainable waste disposal systems.

4. **Water Conservation**
Use water-saving technologies and rainwater harvesting systems.

5. **Sustainable Transportation**
Enhance public transit, bike lanes, and pedestrian pathways to reduce car dependency.

6. **Community Engagement**
Involve residents in environmental initiatives to foster a shared sense of responsibility.

7. **Regulatory updates:**
updated building regulations should facilitate and encourage:

- **Green Building Practices:** Promote eco-friendly construction methods and materials.
- **Energy Efficiency:** Develop energy-efficient infrastructure to reduce consumption.

By integrating these measures, reconstruction efforts can balance urban growth with environmental protection, ensuring ecological resilience and improved quality of life.

## *U.C.4: PRODUCTIVITY*

Activating productive sectors is essential to rebuilding Gaza's socio-economic fabric. A comprehensive strategy to create jobs and stimulate economic growth must precede the reconstruction phase. Guided by the regional Productivity framwork, the urban scale master plans shall follow key elements including:

1. **Agricultural Support:** Prioritize agricultural development to ensure food security, especially in areas identified for green infrastructure. This may require the utilization of modern farming techniques to boost yields and create employment in farming-related industries.

2. **Industrial Zones:** Designated areas in the master plan should cater to industrial development, ensuring they are well-integrated into the regional transportation network.

3. **Commercial Centres:** Revitalize city centres with enhanced commercial hubs to stimulate trade and local business activity.

4. **Business Districts:** Establish business districts to host offices, service-based industries, and professional enterprises. These will serve as incubators for growth, providing infrastructure for startups and established companies alike.

5. **Business Incubators:** Promote entrepreneurship by creating facilities for IT initiatives, startups, and innovation-driven enterprises.

6. **Tourism activation:** Incorporate tourism as a central element of economic development plans by integrating key attractions into a well-designed mobility system and providing comprehensive, user-friendly information services to enhance the visitor experience.

7. **Regulation Updates:** Revise building codes to include provisions for mixed-use developments, enabling the integration of productivity-focused spaces in residential areas.

This strategy combines physical infrastructure with policy reforms, aiming to build a resilient, self-sustaining economy while addressing unemployment challenges.

# Long-term reconstruction and development PHASE (R)

## U.C.5: SUSTAINABLE MOBILITY

The Phoenix Gaza envisions reducing reliance on car-based and wheeled transportation to lower $CO_2$ emissions, while enhancing inclusive and affordable connectivity. Additionally, mobility is crucial issue in the Gaza Strip and should be addressed within a holistic vision for urban resilience. Particularly during war as it became evident that alternative mobility options that avoid being targeted should be developed.

On the urban scale, this approach emphasizes developing an integrated transportation system that links the urban mobility network with the regional one promoting diverse mobility options and avoiding concentration of traffic on city centres. Key to this system is the integration of the multiple moods of transportation mentioned and outlined in the urban scale components below (U.3: Transportation).

## U.C.6: HERITAGE PRESERVATION:

At the urban masterplan level, heritage preservation must be a central element of each city's reconstruction and development strategy. These sites, particularly in the aftermath of war, are essential for reinforcing national identity, fostering community cohesion, and serving as anchors for economic revitalization.

**Key Considerations for Urban Masterplan Integration**

1. **Incorporation to Regional plan:** Ensure heritage preservation zones are well integrated into the broader regional plan.
2. **Incorporation to urban masterplan:** conservation and protection zones should be integrated to the urban master plan and included in its socio-economic perspective.
3. **Preservation zones:** Develop plans for the restoration and conservation of heritage sites damaged during the war, leveraging them as symbols of recovery and unity.
4. **Collective Memory:** Incorporate places of collective in the preservation zones. Creating them spaces for education, reflection, and commemoration. At this stage prioritize sites that embody national identity and resilience or those hold significance to episodes of the ongoing genocidal war.
5. **Capacity Building and Policy Support:** Provide resources and training for local authorities, architects, and conservation professionals to implement sustainable preservation practices.

# B.COMPONENTS OF THE URBAN SCALE MASTERPLANS

Urban masterplans play a crucial role in directing reconstruction efforts towards sustainable urban development. The updated master plan should build upon the municipal pre-war development plans and suggest interventions for the post-war city structure. The masterplan will cover various aspects including zoning, street layouts, public facilities, parks, etc. Subsequently, drawing upon this knowledge, as well as insights gained from assessing damage, identifying needs, and learning from the experiences of war, the city masterplan proposes the following:

1. **Scales of intervention zones:** Analyze destruction patterns to identify and delineate intervention zones at varying scales of damage for each neighborhood. This approach avoids oversimplifications and ensures precise planning to facilitate "building back better." Urban masterplans should reflect these intervention scales, addressing the unique needs of different areas within the city.

2. **Densification zones:** Designate areas for urban densification, accompanied by amendments to building regulations to accommodate reconstructed developments under updated standards.

3. **Transportation infrastructure:** Integrate a comprehensive urban mobility plan into the masterplan, ensuring alignment with sustainable mobility principles.

4. **Regulatory Updates:** Revise and update building regulations to comply with the sustainable and resilient criteria outlined in earlier sections.

# Long-term reconstruction and development PHASE (R)

**5. Conservation zones:** Identify and allocate zones for heritage preservation and sites of collective memory, as guided by the criteria for cultural and historical conservation.

**6. Green zones:** Allocate spaces for new urban parks, neighborhood gardens, and urban agriculture zones (allotments). Include provisions for campsites that can later transition into permanent park amenities.

**7. Social and Cooperative housing:** Reserve areas for social and cooperative housing projects to address current housing needs and accommodate long-term population growth and development.

**8. Mixed-use development zones:** Designate zones that combine residential, commercial, and industrial functions, promoting flexibility, efficiency, and sustainability in land use.

**9. Industrial zones and business zones:** Allocate dedicated areas for industrial development and business activities to support economic growth and job creation.

**10. Public spaces and facilities:** Plan for the distribution of public spaces and facilities to ensure equitable access and enhance community well-being.

**11. Camp improvement schemes:** Improving the quality of life in refugee camps, particularly in damaged blocks, may necessitate significant interventions within the camps. These interventions require a high level of sensitivity, considering the unique challenges and circumstances faced by residents. Properly allocated design teams should be assigned to oversee and implement improvement projects within the camps. These teams should be equipped with the requisite expertise and insight to prepare reconstruction and development plans that ultimately aim to elevate their living standards. Interventions should focus on infrastructure upgrading, housing reconstruction and rehabilitation, and community space reconstruction and enhancement like mosques, sports clubs, and markets. It is necessary that the rebuilding process of these camps prioritises their preservation and avoid any actions that may lead to their elimination. This is particularly crucial due to the political significance of the Palestinian refugee issue, which underscores the enduring right to return.

**12. Future Expansion:** future expansion trajectories are essential to be tackled at this moment and get incorporated into the post war reconstruction plans. More about our recommendations for future expansion is detailed in a separate section

# Long-term reconstruction and development PHASE (R)

## C. SECTORS AND ACTIONS:
## U.1: HOUSING

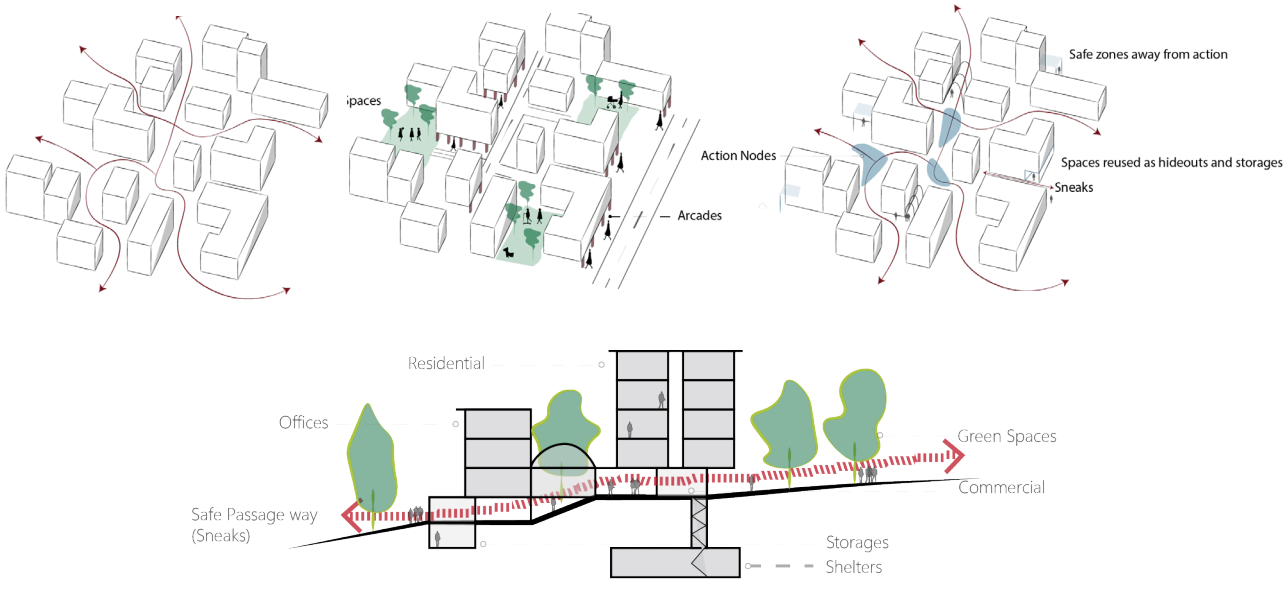
Housing schemes within each locality should align with the regional master plan, reinforcing the housing sector through the following measures:

1. **Densification Zones:** Modify urban and building regulations to accommodate increased density and meet new housing demands.

2. **New Residential Clusters:** Designate areas within the city and on artificial islands for the development of new residential neighborhoods and housing projects.

3. **Mixed-Use Development:** Allocate zones for mixed-use developments across the city, ensuring these areas are well connected to the transportation system for easy accessibility.

4. **Building code adjustment:** Aimed at densifying urban centres, these adjustments would focus on maximizing land utilization in housing projects. Recommended changes include loosening regulations on parcel merging, increasing allowable building heights, revising spatial dimension standards, and implementing other measures to optimize land use.




**MIXED USE URBAN LAYOUT**

## U.2: HEALTHCARE

Rebuild and improve existing health facilities, ensuring they are equipped to meet the growing needs of the population. Additionally, distribute healthcare services across the city by strategically placing or relocating health centres in different regions and incorporating mobile medical units for greater reach and flexibility. This approach ensures comprehensive healthcare access for all residents, particularly in underserved areas.

## U.3: TRANSPORTATION

To create a sustainable mobility system within the urban masterplan, it's essential to integrate various modes of transportation while incorporating modern, sustainable technologies. The following components should be considered:

1. **Public Transport System:**

- A City Electric Tram System (possibly underground) to improve city-wide connectivity and accessibility.
- Bus Transportation Routes to serve all neighborhoods efficiently.
- Well-distributed Bus Stops and Stations for easy access.
- Taxi and Bus Hubs and Parking to ensure seamless mobility and interchange options.

2. **Public Parking Spaces** for private cars to reduce street parking congestion and encourage organized vehicular movement.

3. **City Centre Congestion Alleviation:** Implement Ring Roads and Alternative Routes around the city centre to divert traffic, reduce congestion, and ease commute times.

4. **Smart Mobility and Electric Vehicle Infrastructure:** Integration of electric vehicle charging stations and shared mobility solutions like bike-sharing, e-scooters, and car-sharing systems, contributing to cleaner, more efficient transportation.

5. **Hierarchical Movement System:** Establish a **tiered transportation network** starting from highways and arterial roads, branching down to secondary and tertiary roads. This allows for better flow and connectivity while introducing **discreet routes ("sneaks")** for safer pedestrian and cyclist movement.

# Long-term reconstruction and development PHASE (R)

## U.4: ECONOMY

A general policy framework that envisions a social economy for Gaza's reconstruction is outlined in section chapter 180. The urban master plan should incorporate this framework into its spatial development strategies. The urban master plan must view the economic sector as a key tool for social recovery, aiming to engage all social classes in the production and business sectors. This can be achieved through following the points discussed in (U.C.4: Productivity).

## U.5: EDUCATION

Resuming and developing the education sector should be integral to the regional spatial plan. Local authorities must consider all levels of education, from pre-school, to primary to higher education, as well as incorporate extracurricular activities into social programs that utilize educational facilities.

Given the current circumstances, there is a pressing need for a schooling system where students can spend extended time within the school environment. This requirement should be reflected in the spatial strategy to ensure the development of schools that can accommodate these needs.

Given the psychological and emotional impact on students who sought refuge in schools or experienced trauma due to schools being targeted, it is essential to adapt building regulations and design aspects of educational facilities to mitigate these negative associations. The design should focus on creating healing environments that promote safety, well-being, and emotional recovery, helping to transform schools from sites of trauma into spaces of comfort and resilience.

## U.6: POWER GENERATION

The power network should aim for self-sufficiency and prioritize sustainable energy sources. At the urban level, each local authority should align its power generation and distribution network with the regional plan while strengthening its local capacity to manage potential future crises. To achieve this, the urban masterplan should designate:

1. **Power Plants for Each Urban Centre:** Establish dedicated power plants within each urban centre to ensure localized energy production and distribution.

2. **Underground Network:** Implement an underground power distribution network to enhance infrastructure resilience and minimize disruptions.

3. **Underground Storage Facilities:** Develop underground energy storage facilities to secure reserves and manage power supply during emergencies.

4. **Alternative Power Generation Systems:** Integrate alternative energy sources, as outlined in the regional plan, to diversify and reinforce sustainable power generation options.

## U.7: WASTE MANAGEMENT

The waste management system in each urban center should be designed in alignment with the Gaza Strip-wide framework established at the regional level. This system will ensure cohesive and efficient waste management practices across urban areas, promoting sustainability and environmental health in line with regional objectives.

## U.8: WATER INFRASTRUCTURE

Water infrastructure at the urban scale should align with the regional management and distribution framework, while **allowing flexibility for localized management**. A standardized infrastructure design across localities will help ensure fair and adequate water distribution, supporting consistency and equity in water access throughout the region.

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## U.9: SEWAGE TREATMENT

The system should be based on a revised regional sewage treatment framework. The urban sewage network must be updated to improve pipe quality, adjust sizes and locations, and optimize treatment or disposal sites. Additionally, lessons learned from past and ongoing war, as well as flooding risks, should be integrated into the design to enhance resilience and functionality.

## U.10: RUBBLE CLEARANCE

Should follow the regional rubble clearance plan.

## U.11: MUNICIPAL AND GOVERNANCE SERVICES

Municipal and governmental services play a crucial role in urban recovery, governance and administration, security and safety, supporting healing, well-being, and community cohesion. Each municipality should prioritize essential public facilities to address needs of administration, governance, civil defense, recreation, and other urban services, ensuring fair and inclusive access across locations. Key actions include:

1. **dentification of Facilities:** Designate public facilities that require reconstruction or rehabilitation and identify those that can be replaced or repurposed to better serve community needs.

2. **Decentralized Distribution:** Distribute essential public facilities—such as healthcare, educational, recreational, religious, and commercial services—equitably across the city to ensure accessibility for all residents.

3. **Priority for Community and Recreation Centers:** Focus on establishing and distributing community centers, after-school programs, and sports centers citywide to promote community engagement and provide safe, supportive spaces for all ages.

4. **Inclusive Public Spaces:** Expand and enhance public recreational areas, prioritizing inclusivity to accommodate diverse social groups and foster a sense of belonging and cultural integration. These spaces should encourage interaction, support cultural activities, and promote a welcoming environment for all community members

## U.12: GREEN INFRASTRUCTURE

In the process of rebuilding cities, green spaces should be integrated within urban areas to enhance both livability and ecological health. Green infrastructure at the urban scale should complement the regional plan and be reinforced through the following initiatives:

**Green and Inclusive Public Spaces:** Develop parks and gardens within city centers to provide essential environmental benefits, including air purification, water management, and recreational areas for residents.

1. **Home Gardening Program:** Launch a home gardening initiative to raise awareness and support residents in cultivating personal green spaces.

2. **Tree Planting Program:** Implement a tree-planting scheme along streets and in open spaces to improve air quality, provide shade, and enhance urban aesthetics.

3. **Agriculture Schools:** Establish agricultural schools to educate and train the community in sustainable agriculture practices, fostering long-term food security and environmental stewardship.

4. **Urban Agriculture** The urban master plan should stress the importance of diverse practices of cultivating, processing, and distributing food within urban areas. This enables the fulfilment of a range of environmental, economic, and social benefits, while also strengthening civilian resilience during times of war.

Given Gaza's strong agricultural traditions, urban agriculture can play a critical role in ensuring food security and minimizing related transportation costs. Promoting and supporting urban agriculture can be a valuable asset in everyday life and during periods of violence and crises. To achieve this, the master plan could include the following adaptations:Enhancing rural-urban fringes by integrating agricultural infrastructure.

1. Allocating public agricultural allotments available for rent to residents. This can be done between buildings, particularly destroyed buildings.

2. Modifying building regulations to promote the utilization of setback areas within each parcel for plant cultivation.

3. Encouraging rooftop gardening initiatives.

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## U.13: EMBRACE THE SEA

The Embrace the Sea strategy is a key asset for post-war reconstruction and the long-term development of the Gaza Strip. At the urban scale, this approach should align with the regional plan and be reinforced through the following initiatives:

1. **Shoreline and Boundary Expansion**: Expand the shorelines or city boundaries by repurposing rubble, creating additional land for development and public use.

2. **Seafront Development Schemes:** Develop seafront areas to support tourism, recreation, and economic growth, transforming coastal zones into vibrant, multifunctional spaces.

3. **Integrated Sea Transportation System:** Connect the sea transportation network with the urban transportation system to enhance mobility between coastal and inland areas, supporting both local transit and economic activities.

## Actions, actors and needs:

| Actions | Actors | Needs | Notes |
|---|---|---|---|
| Design Phase | | | |
| Identifying pre-war urban problems and priorities | Government and Municipalities | | • Pre-war plans, reports and research can help to speed up the process<br>• Preparation can start from now |
| Provide pre-war latest development plans | | | |
| Locality postwar DNA | Experts and trained workers | Training sessions International volunteers | • Actions can work in parallel; no sequence is required.<br>• Neighborhoods' committees will help speeding up the process<br>• Preparation can start from now |
| Statistics of population | Trained workers/ Volunteers | | |
| Statistics for facilities to be built | Municipality and DNA report | | |
| Establishing neighbourhoods' committees | Municipalities Families, Social Movements, and local leaders. | Volunteers for collecting data and facilitate the work of experts | |

| Actions | Actors | Needs | Notes |
|---|---|---|---|
| Design Phase | | | |
| Consultations and community participation | Government<br>Municipality<br>Neighborhoods' committees<br>Families<br>Design teams<br>Local associations (engineers association, chamber of commerce, and so on) | Round table discussions and workshops. | |
| Review of the latest updates on pre-war master plans and main urban problems in the city | Design teams. | Data from municipality including reports, maps and statistics.<br>Literature review exploring local attitudes, needs and ambitions | This task is important in order to create masterplans that not only tackles the destruction of war but also the urban problems of the pre-war period |
| Preparation of the vision | Design teams and municipality | Preparation of the vision | |
| Preparing urban masterplan<br>Preparing Urban design proposals for specific zones<br>Preparing infrastructural plans | | Urban planning and design Experts.<br>Municipal and governmental data. | |
| Implementation phase | | | |
| Agreements are signed.<br>Project management report done (stages, needs, funds, etc.)<br>Recruitment of local team<br>Implementation starts | Government<br>Municipality<br>Local /International construction companies | Workforce<br>Machines<br>Construction vehicles<br>Equipment<br>Building Materials | |

## Long-term reconstruction and development PHASE (R)

# NEIGHBORHOODS SCALE

Intervening at the neighborhood scale is critical for enhancing the overall functionality and social fabric of the city. Efforts at this level prioritize planning and designing vibrant, cohesive projects that address community needs, promote connectivity, and support recovery and urban resilience. Guided by urban design principles, neighborhood-scale interventions involve urban design projects that act as a bridge between city-wide master plans and individual architectural projects, with drawing scales of up to 1:1,000.

**Types of Intervention on the Neighborhood Scale:**

1. **Establishment of New Neighborhoods or Large-Scale Projects:**

Developing new neighborhoods or large-scale projects, incorporating sustainable infrastructure and housing solutions to meet future needs.

2. **Redesign and Rebuilding of Entire Neighborhoods:**

For demolished neighborhoods, developing new urban design proposals alongside updated building regulations—including parcel sizes, setbacks, building heights, safe rooms, and material standards—to ensure resilience, safety, and functionality.

3. **Redesign of Neighborhoods to Meet Community Needs:**

Redesigning partially demolished neighborhoods by proposing new spaces, facilities, or layouts in accordance with updated regulations. This includes addressing specific needs through the redesign of public spaces and the addition of community facilities such as community centers, markets, clinics, and maker spaces, fostering social interaction and delivering essential services.

4. **Repairs and Adjustments to Streets and Open Spaces:**

In cases where entire reconstruction is not necessary, interventions might focus on repairing and adjusting streets, walkways, and open spaces to improve functionality, accessibility, and social engagement.

# A. CRITERIA FOR THE NEIGHBORHOODS SCALE DESIGN SCHEMS

## *N.C.1: WARTIME RESILIENCE*

Safety regulations are imperative at this level of neighborhood design. It's essential to incorporate lessons learned from past conflicts and adhere to recommendations for designing neighborhoods that prioritize the safety and well-being of residents. As have been witnessed in the current war, large number of casualties result from secondary fragments or lack of medical supplies or disconnection with medical facilities. Accordingly, in large scale urban projects, like housing schemes, business districts, or reconstruction of demolished neighbourhoods it is important to consider the following:

1. **Safe areas:** include a shelter area and relatively safe passages leading to it.
2. **Power generator:** can be connected to solar system installed at rooftops of the buildings.
3. **Emergency Room:** equipped with emergency medical equipment and assigned to have a small emergency team.
4. **Water reservoir:** collective water reservoir or desalination unit.
5. **Grocery shops:** each housing area should include grocery shops and storages for them.

## *N.C.2: LOCAL AGENCY AND SOCIAL COHESION*

On neighbourhood scale, this criterion should be addressed throughout the reconstruction process and integrated into the design phase to develop spatial layouts that bolster social cohesion. Interventions at the neighborhood scale are pivotal for fostering social cohesion, as this is the level at which human interactions are most immediate and meaningful. To strengthen community bonds and preserve neighborhood identity, actions at this scale should:

1. **Urban living lab:** this paradigm can serve as functional approach for productive and rigorous community engagement.

2. **Design by the community:** Actively involve residents and local social movements in the design and implementation processes through the Urban Living Laps indicated above. Local families, individuals from different gender and group ages, business owners and other stakeholders in the community should participate to make decisions about public spaces, street layouts, ground-floor functions, and common facilities, ensuring these reflect the community's needs and preferences.

3. **Integrate Resident Profiles for Responsive Design:** Incorporate residents' profiles and feedback to ensure neighborhood designs respect and respond to the community's social structure, skills, relationships, and vocational needs, resulting in an inclusive and contextually relevant urban environment.

4. **Develop Community Spaces:** Create public and community spaces tailored to the community, such as sports facilities, community centres, and open public areas, to support local interactions, recreation, and well-being.

5. **Design components:** to strengthen social cohesion on neighbourhood level through design elements, please follow design recommendations in the section "B. Components of Neighbourhood scale design scheme, section 136"

Community participation can be strengthened through the establishment of neighborhood committees, which are collaborative working groups comprising community members and leaders. These committees should be supported by engineers, workers, designers, and experts from universities and ministries. This collaborative approach ensures that local voices are heard and valued in the decision-making process, fostering a sense of ownership and empowerment within the community.

# Long-term reconstruction and development PHASE (R)

## N.C.3: CIRCULA RITY & ALL-AROUND SUSTAINABILITY

At the neighbourhood scale, resilient infrastructure design is essential to support sustainable urban living and address future challenges, especially in the context of Gaza's reconstruction needs. Key considerations should include:

1. **Integration of Green Infrastructure:** Prioritize green infrastructure, such as parks, green roofs, and urban gardens, in urban design schemes to enhance ecological health, manage stormwater, and mitigate urban heat.
2. **Water Management:** Implement systems and designs that manage for rainwater harvesting and efficient wastewater management to reduce dependency on external water sources and promote water recycling, contributing to local water security.
3. **Climate-Resilient Design:** Build infrastructure to withstand extreme weather events and adapt to future uncertainties, incorporating measures to counter long-term climate risks like flooding and heatwaves.
4. **Integrated Waste Management:** the general waste management system should be integrated into the design layout of the district or neighbourhood

## N.C.4: PRODUCTIVITY

At neighbourhood scale we should promote productivity within residential areas which is key to fostering diverse economic opportunities and encouraging community-based growth. This approach focuses on integrating production spaces within living environments, supporting home-based and small-scale enterprises while reducing dependency on commuting. Key elements that can be followed include:

1. **Mixed-Use Developments for Integrated Productivity:**

Develop mixed-use buildings that combine residential spaces with designated areas for crafts, light industries, and small-scale production. Activities that can be supported at this level include

- Crafts and Light Industries: Clothing, footwear, furniture, and artisanal goods.
- Small Enterprises: Food production, home-based IT services, and creative industries.

## 2. Home-Based and Community-Driven Enterprises:

This could support families to sustainable living standards, it includes:

- Home-Based Activities: Encourage micro-enterprises such as food preparation, crafts, and IT services within residential units, enabled by shared spaces and infrastructure.
- Community Workshops: Create community workshops or shared production spaces within neighborhoods for residents lacking private workspace.

## 3. Co-Working Spaces for Tech and Freelancers

Establish co-working hubs in mixed-use developments to support tech startups, freelancers, and remote workers. This approach will promote knowledge-sharing, innovation, and collaboration within local communities.

## 4. Productive Uses of the Rural-Urban Fringe

The rural-urban fringe provides optimal spaces for light food industries, including:

- Meat processing and poultry farming.
- Dairy processing, cheese production, and egg farming.
- Oil production and similar small-scale operations.

This approach leverages mixed-use planning and the strategic use of peripheral urban areas to enhance productivity, stimulate local economies, and encourage sustainable community development..

# Long-term reconstruction and development PHASE (R)

## N.C.5: SUSTAINABLE MOBILITY

A sustainable mobility plan should provide inclusive mobility options for all everyday spaces, ensuring seamless integration of streets, open spaces, and pathways into the broader urban transportation system. At the neighborhood scale, design should consider the following:

1. **Inclusive mobility options** Ensure public transportation, private vehicles, bicycles, and pedestrian pathways are interconnected and accessible. Additionally, design pathways and public spaces to accommodate people of all abilities, including those with disabilities, seniors, and children.

2. **Neighbourhood scale Mobility**

- Street Design: design streets that meet the needs of all, with designated lanes for vehicles, bicycles, and pedestrians.
- Bicycle and Scooter Friendly Infrastructure: Provide bike and scooters lanes and secure parking facilities.
- Walkability: support walkability through pedestrian-friendly streets with shaded pathways and safe crossings.

3. **Resilient infrastructure:**Plan streets and public spaces that are adaptive to climate risks, such as flooding or extreme heat.

## N.C.6: HERITAGE PRESERVATION

Heritage preservation at the neighborhood level is essential for safeguarding sites of collective memory, archaeological significance, and cultural artifacts, transforming them into integral parts of the living environment. These spaces contribute to community cohesion, enhance aesthetic value, and improve the quality of public life, especially in the context of post-war Gaza.

**Key Objectives for Neighborhood-Level Heritage Preservation**

1. **Integration into Neighborhood Design:** Embed heritage sites into the fabric of everyday life by integrating them with public spaces, parks, and pedestrian pathways. These areas can be designed to serve dual purposes, such as community gathering spots, cultural events venues, and educational spaces.

2. **Aesthetic and Functional Contributions:** Use preserved sites as focal points in neighborhood design, enhancing the visual appeal and historical character of the area.

3. **Community-Led Preservation Efforts:** Involve local residents in the identification, preservation, and management of heritage sites to ensure they reflect community values and needs.

4. **Traditional Knowledge:** Incorporate traditional practices and oral histories in preservation efforts to honor intangible heritage alongside physical sites.

5. **Community awareness:** enhance community awareness about the significance of heritage preservation.

## Long-term reconstruction and development PHASE (R)

# B.COMPONENTS OF THE NEIGHBOURHOOD SCALE DESIGN SCHEME

Neighbourhood design schemes should encompass various aspects aimed at creating functional, liveable, and aesthetically pleasing communities. Some key components include:

**1. Neighborhood layout:** The neighborhood layout should move away from a rigid, right-angle grid and instead adopt an irregular design, which offers several key advantages. When considering neighborhood design schemes, the following elements should be prioritized:

- **Diverse Safe Zones:** Irregular layouts create multiple and varied safe zones, providing residents with several options for seeking refuge during times of danger or conflict, enhancing safety.
- **Obstructed Fields of View:** The natural irregularity of the layout obstructs long lines of sight, making it harder for potential aggressors to observe or target specific areas within the neighborhood, improving security.
- **Vehicle Speed Limitation:** The winding and non-linear design of the streets slows vehicle traffic, promoting safer, pedestrian-friendly environments and reducing the risk of accidents.
- **Creation of Social Corners:** Irregular layouts help form pockets and corners within the neighborhood that can serve as communal spaces, encouraging social interaction and fostering community cohesion.
- **Walkability:** Ensure that the neighborhood is designed with walkability in mind, incorporating wide sidewalks, pedestrian crossings, and short blocks to promote walking as a primary mode of transportation.

- **Universal Accessibility:** Design the neighborhood to be universally accessible, ensuring that public spaces and facilities cater to people of all ages and abilities, including those with disabilities

**2. Street Layout:** Neighborhood designs should incorporate a hierarchical movement system that transitions from public to semi-public, semi-private, and private spaces, ensuring a smooth flow of movement while maintaining privacy and security. The integration of "sneaks"—informal paths or shortcuts between buildings—can enhance this hierarchy, promoting better connectivity and mobility. Sneaks can be created through features such as attached buildings, covered sections of streets, or windows overlooking parks and gardens, providing residents with safe and discreet routes to navigate the area.

**3. Arcades on main streets:** Integrating arcades into buildings along main streets offers covered passages that enhance the pedestrian experience, providing shelter from sunlight and rain while ensuring safe passage for pedestrians. Additionally, they can be utilized during escaping and evacuation scenarios. These arcades offer shelter from potential hazards such as debris or projectiles, enhancing safety for pedestrians during emergencies. Additionally, they can serve as gathering points or assembly areas, facilitating organized evacuation procedures, and ensuring smoother movement of people during times of crisis.

**4. Safe Public Spaces:** More about the design of public spaces can be found under the title N.11: Municipal and governmental services .

**5. Regulatory Updates:** Revise building codes to address parcels sizes, merging of parcels, setbacks, common spaces, and buildings entrances with adequate dimensions for planting, playing, ventilation, and natural light.

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## C. SECTORS AND ACTIONS:

## N.1: HOUSING

At the neighborhood scale, design becomes more detailed and focused, addressing the specific needs of the community. At this level, it is excpected that design schemes should be prepared for multiple types of projects including preparing urban design schemes for completely demolished neighbourhoods and urban blocks, or urban design schemes for new residential quarters or new mixed-use neighbourhoods.

**Housing design projects at this level should align with the following criteria:**

1. **Diverse Housing Types and Sizes:** Each residential neighbourhood or housing project, whether newly developed or a reconstruction of a destroyed one, should include a variety of housing types and sizes to accommodate different demographics and income levels. This promotes inclusivity and social cohesion within the community.

2. **Affordable and Modular Housing:** Use modular housing systems for rapid deployment of affordable homes. This can be particularly useful in post-crisis reconstruction, offering flexibility, scalability, and the potential to adapt to changing needs over time.

3. **Collective and Cooperative Housing:** Collective, social, or cooperative housing schemes with shared facilities are encouraged to promote shared services among residents. These types of housing reduce dependency on municipal services and include communal facilities like playgrounds, car parking, and gardens, enhancing community interaction and self-sufficiency.

4. **Raw House Layout:** The spatial layout should prioritize designs inspired by Raw Houses layout, which minimize exposed surface areas to potential dangers such as flying fragments, while keeping at least two facades facing outdoor world. However, this can change and adapt to different layouts according to circumstances.

## N.2: HEALTHCARE

The healthcare system, while planned on an urban scale, must also ensure that residential clusters and remote population centres are adequately served. This can be achieved by equipping these areas with mobile medical units or emergency care spaces to address immediate healthcare needs. Additionally, the system should ensure that access to ambulances and civil defence teams is seamless and well-designed, with clear routes and infrastructure in place to guarantee timely response during emergencies. This approach ensures that healthcare is accessible to all, regardless of location, and enhances the overall resilience of the healthcare network.

## N.3: TRANSPORTATION

The neighbourhood design should prioritize accessibility and efficiency in mobility options, with a focus on integrating public transportation, sidewalks, and bike lanes to ensure seamless connectivity within the community.

**Key Elements:**

1. **Access to Public Transportation:**

- Public transport stops should be strategically located within walking distance from all parts of the neighborhood.

- Bus stops shelters should be incorporated to provide weather protection for waiting passengers.

2. **Pedestrian Infrastructure:**

- Wide sidewalks should be designed with clear pathways for pedestrians, ensuring safe mobility for all users, including those with disabilities.
- Pedestrian crossings should be clearly marked and designed to ensure safety, especially near transit stops and mobility hubs
- Shading and shelters should be included along the walkways to provide protection from sun, rain, and wind, improving comfort and encouraging walking.

3. **Cycling Infrastructure:**

- Dedicated bike lanes should be included in the design to ensure safe and convenient cycling routes, promoting the use of bikes for both commuting and recreation.
- Bike parking areas should be placed near transit hubs, public spaces, and residential buildings.

4. **Traffic Infrastructure:**

- Provide parking solutions in strategic areas, including multi-story car parks in proximity to public transport stops to reduce congestion and encourage the use of public transportation.

5. **Mobility Hubs:**

- Mobility hubs can be envisioned at strategic locations within the neighbourhood where different transportation modes (e.g., buses, cycling stations, and shared vehicles) can converge. These hubs can serve as transit-oriented development (TOD) centres, offering easy transfers between various transport modes and reducing reliance on private vehicles.

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## N.4: ECONOMY

At the neighborhood scale, economic activities should be encouraged, supported, and sustained through thoughtful design and regulatory adjustments. These changes will help foster the growth and success of micro-scale economic activities, enabling local businesses to thrive and contribute to the overall economic resilience of the community.

## N.5: EDUCATION

Educational facilities should be designed as multifunctional spaces that extend their role beyond traditional schooling to serve as social hubs for community engagement and entertainment. This requires incorporating open, inclusive spaces that integrate with community life, minimizing physical and social barriers. Such an approach fosters a positive environment, transforming schools into community-centered spaces while mitigating the traumatic associations often linked to them.

## N.6: POWER GENERATION

At the neighbourhood scale, the power network system should follow a decentralization approach to enhance resilience and self-sufficiency. Each neighbourhood may also include:

1. **Small Power Generation Units:** Implement small-scale power generation units within each neighbourhood, such as micro-grids or localized renewable energy sources, to meet the energy needs of residents.

2. **Sand Batteries for Energy Storage:** Incorporate sand batteries, which provide an innovative and sustainable energy storage solution, to store excess energy and ensure a stable power supply during times of high demand or outages.

3. **Solar System Lighting Features:** Install solar-powered lighting throughout the neighbourhood to provide sustainable, off-grid lighting solutions that reduce energy consumption and enhance safety in public spaces

## N.7: WASTE MANAGEMENT

The waste management system at the neighbourhood scale should align with the broader waste management framework established for the region. Key elements should include:

1. **Collection Rooms Integrated into Buildings:** Designate and incorporate waste collection rooms within buildings to encourage efficient waste sorting and storage, making it easier for residents to manage their waste in a centralized, organized manner.

2. **Street Furniture with Sufficient Bins:** Ensure that public spaces are equipped with an adequate number of waste bins, integrated into street furniture, to encourage proper disposal of waste and maintain cleanliness in the neighborhood.

By aligning with the overall waste management system, these interventions will help streamline waste collection, reduce environmental impact, and foster a cleaner, more sustainable community

## N.8: WATER INFRASTRUCTURE

The water infrastructure at the neighbourhood scale should be integrated with the general water distribution system to ensure consistency and efficiency. Key components should include:

1. **Alignment with General Water Distribution System:** Ensure the neighborhood's water infrastructure is synchronized with the broader water management and distribution network, providing reliable access to water while maintaining a cohesive system across the region.

2. **Water Harvesting Wells for Irrigation:** Implement water harvesting wells to collect rainwater or runoff, which can be used for irrigating public spaces such as parks, gardens, and green areas. This helps conserve potable water, reduces pressure on the main water supply, and supports sustainable landscaping practices.

## N.9: SEWAGE TREATMENT

The primary sewage treatment network should serve as the overarching framework for this service. However, at the neighborhood scale, consideration must be given to:

- **Developing an efficient drainage system:** with updated grid line sizes and locations to align with the new treatment infrastructure.
- **Incorporating stormwater drainage:** to ensure effective water management and prevent flooding.

## N.10: RUBBLE CLEARANCE

The general rubble clearance plan should serve as the framework for this initiative. However, community involvement can be encouraged at this stage by providing the following support:

1. **Civil defence:** A representative from civil defence should be present when work involves areas with damaged or unstable structures to ensure safety.
2. **Training:** Basic training should be provided to community members to educate them on risk mitigation and safe practices.
3. **Equipment:** Supply essential tools such as DIY kits and carts to facilitate the clearance process.
4. **Machines:** Engage private machinery to assist in the collection and removal of rubble.
5. **Designated Dump Points:** Identify and allocate specific locations where residents can deposit rubble for subsequent collection by municipal workers.

# Long-term reconstruction and development PHASE (R)

## N.11: MUNICIPAL AND GOVERNMENTAL SERVICES

At the neighbourhood scale, municipal and governmental services play a pivotal role in delivering essential urban amenities while fostering community engagement and improving the quality of life. These facilities should holistically integrate education, recreation, healthcare, and socialization opportunities, ensuring accessibility and inclusivity for all residents. Key projects and priorities include

1. **Market Development:** Reconstruct traditional markets and propose new ones that align with the urban master plan. Focus on market location and potential relocation to ensure smooth traffic flow and balanced urban development.

2. **Seaside Development:** Propose schemes that capitalize on Gaza's coastal resources for economic and recreational opportunities.

3. **Cultural and Historical Preservation:** Restore and preserve cultural and historical sites to enhance community identity and cohesion.

4. **Safe public spaces:** these should be community-cantered facilities that create secure, inclusive, and vibrant public spaces that encourage socialization and recreation.

**Design of safe public spaces:**

Safe public spaces are vital for fostering community cohesion and enhancing residents' well-being. These spaces should be strategically placed as gathering spots, meeting points, and recreational hubs that improve both the area's aesthetics and the quality of life.

Key Elements for Public Space Design:

1. **Safety and Visibility:**

- **Lighting:** Ensure public spaces are well-lit to enhance safety and reduce crime risk.
- **Surveillance:** Use open sightlines and visible seating to encourage natural surveillance.
- **Defensible Space:** Create clear boundaries and well-maintained spaces to foster community ownership and safety.

2. **Multi-Functional Spaces:**Include playgrounds, outdoor seating, fitness zones, and adaptable spaces for events like markets and festivals to support various activities and community engagement.

3. **Community Engagement:**Design spaces for community events (amphitheaters, market squares) that encourage cultural performances, workshops, and social gatherings. Ensure accessibility for all residents.

4. **Green and Aesthetic Design:**Integrate greenery, water features, and sustainable landscaping to enhance beauty, improve environmental health, and provide nature access.

5. **Seating and Social Spaces:**Offer varied seating (benches, picnic zones) for relaxation and social interaction. Small plazas or pocket parks encourage informal gatherings.

6. **Accessibility and Connectivity:**Ensure spaces are accessible by pedestrian paths, bike lanes, and public transport stops for seamless connectivity to residential areas.

7. **Public Art:**Incorporate art installations and spaces for cultural events to strengthen neighborhood identity, particularly in post-reconstruction areas.

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## N.12: GREEN INFRASTRUCTURE

Incorporating green spaces and urban agriculture in neighborhood designs enhances food security, promotes community cohesion, and improves mental well-being. Urban agriculture projects like rooftop gardens and community farms can reduce reliance on external supply chains, promote local food production, and support Gaza's agricultural heritage without expanding into rural lands.

Key Benefits:

- **Food Security:** Urban farms and gardens provide sustainable local food, reducing dependency on external supply chains.
- **Health and Well-being:** Green spaces promote physical and mental health by offering areas for recreation and relaxation.
- **Environmental Sustainability:** Green infrastructure, like rainwater harvesting and green roofs, supports stormwater management, energy efficiency, and biodiversity.
- **Social Cohesion:** Community gardens foster interaction, collaboration, and education on sustainability and food systems.

## N.13: EMBRACE THE SEA

Urban-scale seafront development schemes are significant assets for social and economic progress. However, at the neighborhood scale, these projects must be carefully integrated into their surroundings with attention to the following considerations:

1. **Promote the Right to the City:** Ensure inclusivity and accessibility for all, allowing diverse groups to benefit from the development.
2. **Empower Micro-Dynamics Without Compromising Aesthetics:** Support local activities and interactions while maintaining the visual and cultural integrity of the area.
3. **Integration with Urban Mobility Networks:** Establish seamless connections with broader mobility systems, prioritizing pedestrian pathways and cycling routes.
4. **Respect Public Rights at the Shore:** Safeguard public access and use of the shoreline, ensuring it remains a shared resource for the community.

## Actions, actors and needs:

| Actions | Actors | Needs | Notes |
|---|---|---|---|
| Design Phase | | | |
| Urban masterplan is complete and approved | Municipality and Gov | | Neighbourhood design teams should include local architects from the same area. |
| Participatory design workshops | Design teams.<br>Neighborhood committees<br>Political and Social Movements<br>Municipalities | Participatory workshops are preferably held on site to meet community notes and understand the context | |
| Preparing neighborhood design drawings. | Design teams. | Design teams should be updated with different approaches to neighborhood design and conduct brainstorming with experts in the field. | |
| Review of plans | Neighborhood committees | | |
| Approval of plans | Municipalities | | |
| Implementation phase | | | |
| Assign locations for community participation in implementation | Municipality<br><br>Design team | | |
| Composing community building teams | Municipality<br>Architects<br>Neighborhood committees<br>Volunteers | Architectural design<br>DIY tools<br>Construction machines<br>Building materials | Communal spaces and landscape elements can be appropriated by the residents. |
| Contracts with construction companies | Government<br>Municipality<br>Construction companies | Architectural design<br>Funding | Construction of buildings, infrastructure development, |
| Reconstruction begins | Construction companies | | |

## Long-term reconstruction and development PHASE (R)

# ARCHITECTURAL SCALE

On the architectural scale, it is crucial to construct buildings that prioritise human comfort, safety, and well-being. While general layouts of urban schemes and neighbourhood designs may dictate the overall character of individual buildings, architects must pay close attention to additional considerations when designing each structure.

# A. CRITERIA FOR ARCHITECTURAL SCALE DESIGN

## *A.C.1: WARTIME RESILIENCE*

In many cases, buildings near blast spots have a certain capacity to withstand and remain standing, potentially providing protection to the people inside them. It's important to note that injuries and fatalities can occur not only from the direct bombing of buildings but also from primary fragments originating from materials adjacent to the explosion source and secondary fragments generated from the disintegration of building materials in response to the shockwave released by an explosion.
Architectural design plays a crucial role in mitigating casualties by offering design solutions to protect residents as much as possible. Accordingly, each architectural design should include the following criteria, which also can be updated by the authorities:

1. **Mandatory Safe Rooms:** Implement changes in building regulations to require the inclusion of safe rooms within structures, providing residents with shelter during air raids or emergencies.

2. **Reinforced Concrete:** Utilize reinforced concrete sheer walls for staircases and front facades to enhance structural integrity and resilience against impact or blast effects.

3. **Irregular Street Facades:** Design street facades to be irregular rather than straight, which can help deflect blast waves and reduce the impact of explosions on buildings.

4. **Safe Entrances and Recesses:** Long facades without entrances or recesses pose challenges for evacuation routes during emergencies. To address this issue entrances to buildings along the front facade should be recessed backwards by a minimum of 1 meter. This design feature allows for a safer transition into the building and provides hiding options in case of escaping. By incorporating recessed entrances, residents have a protected space to seek shelter or regroup during evacuation scenarios, enhancing overall safety and resilience within the neighbourhood.

5. **Blast-Resistant Structures:** Design public buildings such as hospitals and schools to be blast-resistant, incorporating features such as blast-resistant windows and facades to mitigate the effects of explosions and enhance overall safety for occupants.

## A.C.2: LOCAL AGENCY AND SOCIAL COHESION

Architectural design should actively support local agency and social cohesion, especially in mixed-use developments, shared spaces, streetscapes, and common areas in housing clusters. Design Guidelines for Social Cohesion:

1. **Regulatory Updates:**
- Revise building codes to address setbacks, rooftop utilization, common spaces, and apartment staircases with adequate dimensions for planting, ventilation, and natural light.
- Adapt setback areas for playgrounds and gardens.

2. **Cultural Sensitivity:**
- Reflect local history and traditions in building form, material choices, and design.
- Encourage use of local materials and culturally inspired forms that blend with the site's context.

3. **Community and Privacy Balance:**
- Design communal spaces such as courtyards, rooftop terraces, or shared gardens to foster interaction while respecting privacy for each household.
- Create outdoor spaces for families that ensure privacy.

4. **Self-Design and Construction:**
- Promote self-built housing for structurally sound buildings, ensuring adherence to updated codes.
- Fairly balance private property rights during enforced changes through transparent negotiation.

5. **Accessibility and Inclusivity:**
- Implement universal design principles, including ramps, elevators, wide doorways, and tactile/visual aids.
- Ensure spaces are accessible to all, fostering inclusivity.

6. **Spatial Hierarchy and Zoning**
- Clearly delineate public, semi-public, and private spaces for better navigation and optimized functionality.

7. **Encourage Collective Spaces:**
- Design rooftops for shared activities, enhancing community engagement.
- Use staircases as interactive zones with natural features like plants and access to fresh air.

# Long-term reconstruction and development PHASE (R)

## A.C.3: CIRCULA RITY & ALL-AROUND SUSTAINABILITY

Creating sustainable buildings benefits the environment and reduces energy consumption. It also enhances residents' capacity to cope with the potential collapse of major infrastructure in the Strip. Therefore, it is essential to integrate sustainable design principles into the design of individual buildings.

**Recommendations to enhance sustainability may include:**

1. **Energy Efficiency and Low-Carbon Design:** Incorporating energy-efficient systems such as solar panels and smart control technologies minimizes energy use. Low-carbon construction methods help reduce the building's carbon footprint.

2. **Water Wells:** Incorporating water wells for each dwelling or installing large reservoirs in basements to provide access to water during times of scarcity or disruption in municipal water supplies.

3. **Home gardening:** Encouraging home gardening in setback areas to promote local food production, improve air quality, and enhance residents' self-sufficiency during periods of limited access to fresh produce.

4. **Rainwater collection:** install reservoirs for rainwater collection to be used for cleaning and irrigation purposes.

5. **Thermal Comfort and Climate Responsiveness:** Design should respond to the local climate by incorporating passive strategies such as natural ventilation, shading, and insulation to maintain comfortable indoor temperatures and reduce energy consumption.

6. **Healthy Building Materials:** Low-emission materials (e.g., paints and finishes with low VOC content) should be used to improve indoor air quality. Sustainable and locally sourced materials also contribute to environmental sustainability.

7. **Green Architecture Practices:** adopt eco-friendly designs, construction techniques and materials.

## *A.C.4: PRODUCTIVITY*

Encouraging micro-economic activities should be embedded in the design and reconstruction of residential areas. Building codes should be revised to incorporate safety standards specific to small-scale production facilities and workspaces, ensuring they are secure and safe for both residents and workers.

Key elements to support this approach include:

1. **Enhanced Safety Standards for Production Facilities:** Set clear standards for small-scale production facilities within residential areas to ensure they meet security and safety requirements, protecting residents and supporting safe work environments.

2. **Promote Mixed-Use Patterns:** Encourage mixed-use building designs where residential and workspaces coexist within the same structure or neighborhood, allowing residents to work close to home and fostering economic productivity.

3. **Legislative Adjustments for Crafts and Light Industries:** Update local regulations to permit crafts and light industries within residential zones, supporting a diverse, flexible economy that can thrive within the community.

4. **Architectural design:** the architectural design should be flexible to families' potentials to establish business or crafts spaces within their households.

This approach allows neighborhoods to become economically vibrant, providing residents with the flexibility to engage in productive activities close to home while adhering to high safety and quality standards.

# Long-term reconstruction and development PHASE (R)

## A.C.5: SUSTAINABLE MOBILITY

A sustainable mobility approach at the micro scale should ensure safe, accessible, and enjoyable routes for all residents. Streets and pathways should be designed with inclusive accessibility, enabling all community members to move easily to and from their homes.

**Key elements include:**

1. **Inclusive Accessibility Options:** Design streets and buildings with accessibility in mind, providing features such as ramps, tactile paving, and wide walkways to accommodate diverse mobility needs, including those of people with disabilities, the elderly, and young children.

2. **Sustainable Materials and Street Design:** Use durable, eco-friendly materials in road construction and sidewalks to enhance environmental sustainability. Ensure that design choices minimize environmental impact while maximizing safety and comfort for users.

3. **Signage and Street Furniture:** Incorporate clear, well-placed signage for navigation, and provide street furniture such as benches, waste bins, and bicycle racks, making streetscapes more functional and inviting for pedestrians and cyclists.

By emphasizing safety, accessibility, and environmental responsibility, sustainable mobility can contribute to a more resilient and connected neighborhood environment

## A.C.6: HERITAGE PRESERVATION

Preserving local identity, collective memory, and sites of cultural or architectural significance should follow the comprehensive heritage preservation framework that balances sustainability with cultural relevance. This approach should extend beyond simply "museumizing" heritage sites, instead fostering their integration into daily life.

**Key considerations include:**

1. **Incorporate Heritage Sites into Everyday Life:** Rather than isolating heritage structures, ensure they are actively utilized as part of the community's functional spaces. This may include repurposing them for cultural, educational, or community uses that keep them relevant to the public.

2. **Sustainable and Feasible Preservation:** Develop preservation strategies that are both sustainable and feasible, addressing financial, environmental, and social factors to support long-term conservation efforts.

3. **Repurposing and Revitalization Plans:** Create plans to revitalize heritage structures and their surrounding areas, making them vibrant parts of the community. These plans should enable adaptive reuse of spaces in ways that maintain historical value while supporting current community needs.

Through these strategies, heritage preservation can reinforce cultural identity, promote community engagement, and sustain the historical integrity of the area, enhancing both community cohesion and the sense of place

# Long-term reconstruction and development PHASE (R)

## B.COMPONMENTS OF THE ARCHITECTURAL SCALE DESIGN

To support individuals' ability to recover from traumatic experiences and promote healthier indoor environments, architects should prioritize creating high-quality spaces. This can be achieved through thoughtful consideration of layout, materials, views, and other design elements. Key recommendations to improve space quality include:

1. **Wartime resilience measures:** these measures are included in the wartime resilience criteria mentioned above. All architectural design schemes should follow these instructions and keep up with new updates.

2. **Social cohesion measure:** these measures are included in the A.C.2: LOCAL AGENCY AS A SOCIAL COHESION criteria mentioned above. All architectural design schemes should follow these instructions and keep up with new updates.

3. **Sustainability**:

- **Rubbish collection:** Creating dedicated rooms within buildings to promote cleanliness and hygiene.

- **Biophilic Design and Well-Being:** Biophilic design integrates natural elements such as plants, water, and natural materials into the building, promoting well-being. Access to greenery or views of nature has been shown to improve mental health.

**4. Space quality:**

- Incorporating active ground floor or basement activities to encourage community interaction and engagement
- Include large windows that offer access to good views, natural light, and ventilation, which can promote a sense of well-being.
- Ensuring that the number of car parking spaces is sufficient to meet the needs of building occupants, thereby reducing congestion and promoting ease of access. Building regulations can be adjusted to facilitate the inclusion of more parking lots in the setback areas or in underground levels. Additional parking can be located underneath streets, or in empty plots assigned by the municipality.
- Adaptable for future expansion as much as possible.
- **Daylighting and Visual Comfort:** Maximizing natural light through optimal building orientation and window placement helps reduce the need for artificial lighting and creates healthier indoor environments. Additionally, proper daylight distribution and glare control are critical for visual comfort.
- **Acoustic Comfort:** Acoustic insulation and material choices should minimize noise pollution and enhance the auditory comfort of indoor spaces. Solutions for mitigating external noise are particularly important in urban and high-density areas.

**5. Flexibility and Adaptability**

Buildings should be designed with flexible spaces that can be adapted for different uses over time. This allows for long-term changes, such as converting residential spaces into offices or community centers.

**6. Integration with Urban and Landscape Context**

Buildings should seamlessly connect to their surrounding landscape and urban context, integrating green spaces, pathways, and public plazas to enhance the user experience.

# Long-term reconstruction and development PHASE (R)

## C. SECTORS AND ACTIONS:

## A.1: HOUSING

Housing projects should follow the previous section (B. COMPONMENTS OF THE ARCHITECTURAL SCALE DESIGN) and meet the minimum dimension requirements in the updated building code.

**Key considerations include:**

1. **Adaptive Reuse:** In post-war period, prioritize the adaptive reuse of damaged buildings to conserve resources and preserve community identity.

2. **Enhanced Building Codes:** Adjust codes to incorporate shelters, safe zones, independent energy generation, water wells, and essential infrastructure within healthcare facilities, ensuring service continuity during emergencies.

3. **Building code adjustment:** Aimed at densifying urban centres, these adjustments would focus on maximizing land utilization in housing projects. Recommended changes include loosening regulations on parcel merging, increasing allowable building heights, revising spatial dimension standards, and implementing other measures to optimize land use.

4. **Informed Rebuilding:** Rebuilding demolished homes and residential clusters in alignment with the updated building codes, ensuring resilience and compliance with new standards.

## A.2: HEALTHCARE:

To strengthen healthcare resilience and accessibility, healthcare infrastructure should incorporate robust safety features, flexible usage designs, and mobile capabilities.

**Key elements include:**

1. **Enhanced Building Codes:** Adjust building codes to require shelters, safe zones, independent energy generation, water wells, and other critical infrastructure within healthcare facilities, ensuring continuity of services during emergencies.

2. **Community-Integrated Clinics and Emergency Centers:** Incorporate external clinics and emergency centers within community centers and housing projects, enhancing accessibility to basic health services throughout neighborhoods.

3. **Underground Backup Facilities:** Integrate underground wards and medical storage facilities within major hospitals to serve as alternative spaces during emergencies. These spaces can function as parking during peacetime and convert into shelters or medical facilities during crises.

4. **Mobile Emergency Units:** Establish mobile emergency units and clinics connected to health facilities. These mobile units can be redistributed during emergencies, providing flexible, on-demand healthcare support

# Long-term reconstruction and development PHASE (R)

## A.3: TRANSPORTATION

An integrated transportation approach at the building level should prioritize accessibility, connectivity, and multi-modal transport options.

**Key elements include:**

1. **Access to Main Pathways:** Ensure that each building is conveniently connected to main pathways, promoting ease of movement for residents and visitors.

2. **Street Design:** streets should be designed to architectural scale and attention should be paid to their social role as vital public spaces where people meet and interact. Hence proper design is crucial.

3. **Underground Car Parking:** Designate underground parking spaces beneath buildings to optimize land use and minimize surface-level congestion.

4. **Bicycle Parking:** Provide dedicated bicycle parking to encourage sustainable and active transportation options for residents.

5. **Alternative Backdoor Access:** Include alternative exits or backdoor access to neighboring plots or adjacent parking areas, enhancing connectivity and safety.

6. **Connection to Parking Lots:** Ensure buildings have clear, accessible pathways connecting to nearby parking lots, facilitating efficient movement for all transport modes

## A.4: ECONOMY

Design considerations should ideally be developed in consultation with the targeted families to understand their specific needs and aspirations which enable their productivity within the household. Additionally, the potential for different types of businesses and economic activities within the neighborhood should be assessed to ensure the proposed productivity spaces align with the local context and market demand.

## A.5: EDUCATION

New architectural standards should be incorporated into the building regulations for schools and higher education facilities. These standards may include:

1. **Shelters and Safe Storage:** Incorporate underground shelters and storage facilities to enhance safety and emergency preparedness

2. **Flexibility:** Design adaptable spaces that can serve alternative functions, such as hosting community activities in the evenings or accommodating displaced families during emergencies.

3. **Enhanced Hygienic Conditions:** Equip schools and universities with scalable sanitation facilities, including durable and hygienic materials, to support increased usage when necessary.

4. **Enhancing community activities:** design should enable the school to be operated for social activities beyond teaching time.

## A.6: POWER GENERATION

To promote sustainable energy use and reduce reliance on external power sources, buildings should incorporate renewable and energy-efficient systems.

**Key elements include:**

1. **Solar Energy Systems:** Equip buildings with solar panels to harness renewable energy, contributing to energy self-sufficiency and reducing carbon footprint.

2. **Natural Lighting Optimization:** Design buildings to maximize natural lighting, reducing the need for artificial lighting during the day and lowering energy consumption.

3. **Sustainable architecture:** sustainable architectural guidelines should be followed to minimize power consumption.

## A.7: WASTE MANAGEMENT

Effective waste management at the building level should align with the broader waste management system to ensure sustainability and proper waste handling.

**Key elements include:**

1. **Rubbish Sorting Policy:** Each building should follow the municipal waste sorting system, in line with the regional waste management framework, to separate recyclables, organic waste, and general waste for efficient processing.

2. **Dedicated Waste Disposal Spaces:** architectural design should allocate a dedicated area within each building for rubbish bins, unless there is a designated neighbourhood collection point, ensuring that waste is properly managed and easily accessible for collection.

## A.8: WATER INFRASTRUCTURE

To ensure reliable and sustainable water access, buildings should incorporate water storage and management systems.

**Key elements include:**

1. **Water Reservoirs:** Each building should be equipped with a water reservoir to store water for both daily use and emergencies, reducing dependency on external water supply systems.

2. **Basement Water Tanks:** Install water tanks in the basement to maximize space and ensure that water is available for immediate use, particularly during periods of high demand or water shortages.

3. **Rainwater Wells:** Consider incorporating rainwater harvesting wells within the building's infrastructure, where feasible, to provide an additional source of water, further enhancing self-sufficiency.

## A.9: SEWAGE TREATMENT

The general Sewage Treatment network should serve as the framework for this service. However, community involvement can be encouraged especially at the early stages of reconstruction process, to do so it is important to provide the following:

1. **Equipment:** Supply essential tools such as DIY kits to facilitate repairing activities by families themselves.

2. **Plants:** provide plants or seedlings for home gardening and purification like Eucalyptus or moringa oleifera.

3. **Septic tanks:** this approach can be encouraged at the early stages of reconstruction process.

# Long-term reconstruction and development PHASE (R)

## A.10: RUBBLE CLEARANCE

The general rubble clearance plan should serve as the framework for this initiative. However, community involvement can be encouraged at this stage by providing the following support:

1. **Civil defence:** A representative from civil defence should be present when work involves areas with damaged or unstable structures to ensure safety.
2. **Training:** Basic training should be provided to community members to educate them on risk mitigation and safe practices.
3. **Equipment:** Supply essential tools such as DIY kits and carts to facilitate the clearance process.
4. **Machines:** Engage private machinery to assist in the collection and removal of rubble.
5. **Designated Dump Points:** Identify and allocate specific locations where residents can deposit rubble for subsequent collection by municipal workers.

## A.11: MUNICIPAL AND GOVERNMENTAL SERVICES.

The Municipal and governmental facilities, including municipal halls, police stations, civil defence centres, mosques, community centers and others should be designed to ensure safety, resilience, and self-sufficiency. These facilities should also be conceived as multi-functional to serve various community needs.

**Key projects include:**

- Town halls and municipalities
- Police and government buildings
- Hospitals and medical centres
- Religious buildings
- Educational buildings
- Civil defence facilities
- Municipal storage
- Multi-story car parking near city centres, integrated with public transport routes
- Community centres and sports facilities
- Multipurpose halls
- Public shelters integrated into facilities, doubling as parking during normal times and shelters in emergencies

**Design Considerations:**

1. **Reinforced Concrete Structure with Vertical Cores:** Ensures safety and structural integrity during emergencies.
2. **Shelters:** Public buildings should include designated shelters for protection during crises.
3. **Water Reserves/Water Wells:** Equip with water reserves to ensure reliable supply during disruptions.
4. **Solar Energy Systems:** Install solar panels on rooftops, linked to neighborhood sand battery systems, to ensure energy independence during power outages

# Long-term reconstruction and development PHASE (R)

## A.12: GREEN INFRASTRUCTURE

Green infrastructure at the building scale should prioritize sustainability, local food production, and ecological health.

**Key elements include:**

1. **Dedicated Garden Space:** Allocate a portion of each building plot for gardens, encouraging greenery at ground level and fostering a connection with nature.

2. **Rooftop and Vertical Gardens:** Encourage the development of rooftop gardens, green roofs, and vertical gardens, which provide vital environmental benefits, including air purification, water management, insulation, and recreational space.

3. **Urban Agriculture Initiatives:** Promote urban agriculture projects such as community farming spaces and rooftop vegetable gardens to support local food production and strengthen Gaza's agricultural heritage, while minimizing expansion into rural lands.

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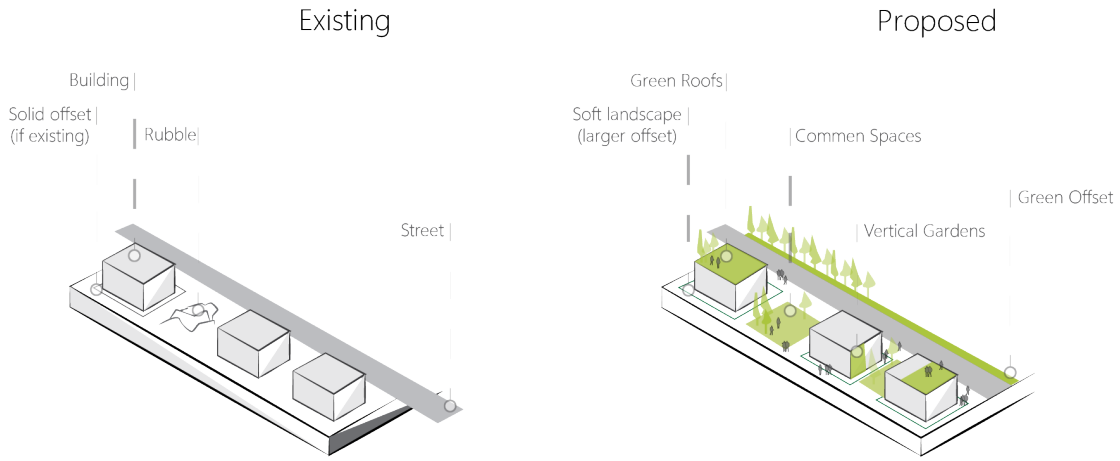


VARIOUS TYPES OF URBAN AGRICULTURE

## A.13: EMBRACE THE SEA

Empowering the right to access the seaside and fostering micro-economies through seaside development plans are crucial objectives. These efforts should be complemented by updates to the design and use of seaside areas, including the following measures:

1. **Seaside Protection:** Safeguard the shoreline from misuse, pollution, and soil degradation through thoughtful design elements and the enforcement of strict regulations.

2. **Aesthetics:** Preserve and enhance the visual appeal of the seaside to maintain its cultural and environmental value.

3. **Safety:** Ensure the safety of visitors—whether swimming, strolling, or relaxing—through the deployment of adequate security personnel, lifeguards, and other safety measures.

4. **Free Zones**: Include no-cost amenities such as children's playgrounds and open-access shorelines in development plans to ensure inclusivity and equitable use.

## Actions, actors and needs:

| Actions | Actors | Needs | Notes |
|---|---|---|---|
| Design Phase | | | |
| Amendments on building regulations | Design teams. Municipalities | Participatory workshops are advised here to discuss these changes | Design teams should include local architects, preferably from the same area. |
| Preparing architectural design drawings | Design teams. | Family profile typologies should be considered in designing residential units | |
| Approval of plans | Municipalities | | |
| Implementation phase | | | |

# ANNEXES

# ANNEXES 1: RECOMENDATIONS

A. BBB- BUILDING BACK BETTER

B. FUTURE EXPANSION

C. ECONOMIC SECTOR DEVELOPMENT OF GAZA: Policy Framework: Envisioning a Social Economy for Gaza's Reconstruction

D. PLANNING AND DESIGN CONCEPTS

# A.BBB - BUILD BACK BETTER

## PRESSING NEED

Since 2008, the Gaza Strip has undergone multiple waves of wars and destruction that were followed by reconstruction schemes. These schemes have conspicuously failed to meet objectives and elevate the resilience capacity of the Gaza Strip.

The Phoenix Gaza learns from previous experiences to achieve more effective and fairer results, building upon best practices in compatible contexts, such as the process developed for the reconstruction of Nahr Al-Bared, Lebanon.

Before the beginning of the 2023 war, several municipalities, notably Gaza City, had finalised development plans to address new challenges in local urban development at the urban scale.

This first edition of the Gaza Phoenix already integrates and further develops aspects proposed by municipal plans, while others will undergo a thorough review and consideration for inclusion.

According to the World Bank's, United Nations and European Union's "Gaza Interim Damage Assessment", published on the 29 of March 2024[1], the estimated damage in the Gaza Strip amounts to 60% for physical infrastructure, 62% of housing, 84% of health facilities, 63% of university campuses and 275 schools affected by severe damage or complete destruction, with costs rising to a whopping 18,465,831,000 USD that encompass all sectors.

As highlighted by the report, the destruction of material assets combines with that of the social tissue, which not only entails the direct affection of human lives (which surpassed the 35.500 casualties and 79.600 injuries, according to the Gaza Ministry of Health's report dated 20 May 2024[2]), but also includes multi-dimensional poverty, food insecurity, sheer deterioration of life and health prospects for the Gaza population for the coming decades, separation of families, psychological traumas at the individual and collective level, displacement and orphanhood, and the increased exposure of civilians of all ages to different kinds of exploitation and abuses.

| Sector | US$ | |
|---|---|---|
| Housing | $ | 13,298,711,000 |
| Commerce, Industry, and Services | $ | 1,655,486,000 |
| Agriculture | $ | 628,780,000 |
| Health | $ | 553,666,000 |
| WASH | $ | 502,711,000 |
| Environment | $ | 411,300,000 |
| Transport | $ | 357,972,000 |
| Education | $ | 341,240,000 |
| Cultural Heritage | $ | 319,397,000 |
| Energy | $ | 278,522,000 |
| ICT | $ | 90,225,000 |
| Municipal Services | $ | 19,647,000 |
| Finance | $ | 8,174,000 |
| **Total** | **$** | **18,465,831,000** |

Estimated damages in monetary terms (US$) by sectors.
Source:Gaza Strip Interim Damage Assessment Summary Note March 29, 2024, P 6[2].

## OPPORTUNITY FOR CHANGE

The extensive reconstruction needed for Gaza also presents an opportunity to rethink pre-existing trajectories, integrating the reparatory response to damage with interventions auspicated by municipal authorities and new more extensive measures that address and even anticipate rising challenges at the local, regional, and global scale.

The war on Gaza presents an opportunity to reimagine the city and rebuild a brighter and more resilient future. The extensive destruction requires rebuilding or repairing regional and urban infrastructure as well as entire neighbourhoods. This scale of intervention provides a chance to "Build Back Better," addressing pre-war issues and creating a more sustainable, resilient, and inclusive urban environment.

1 https://thedocs.worldbank.org/en/doc/14e309cd34e04e40b90eb19afa7b5d15-0280012024/original/Gaza-Interim-Damage-Assessment-032924-Final.pdf

2 https://www.aa.com.tr/en/middle-east/palestinian-death-toll-rises-to-35-562-as-israel-continues-to-pound-gaza/3225033

## REGULATORY UPDATES

As highlighted throughout the framework, there is an urgent need for regulatory updates at multiple scales. These updates involve revising and adjusting policies and building regulations, spanning from the regional level down to the architectural scale. It is essential that these regulatory revisions precede the development of any master plans or design schemes. Establishing these regulatory changes will provide a solid foundation for sustainable and efficient reconstruction and development efforts in post-war Gaza.

## TABLE OF RECOMMENDATIONS

The table below outlines key opportunities for building back better in Gaza. These recommendations highlight potential interventions at various scales and suggest regulatory changes to facilitate sustainable reconstruction and development. This framework aims to open a dialogue around this critical issue and provide actionable insights for creating a resilient and thriving post-war environment.

| | **Scale of intervention** | | **Opportunity** | **Needs** |
|---|---|---|---|---|
| | **Title** | **Details** | | |
| 1 | Building rehabilitation | Repairing and rehabilitating affected buildings that can be repaired without the need for reconstruction. This may include buildings with slight and moderate damage. (structural reinforcement, rebuilding walls, repairing infrastructures, installing windows, tiling, installing kitchens, toilets, painting and furnishing) | Opportunity to:<br><br>Solve per-war urban problems:<br>• Car parking<br>• Bomb shelters<br>• Reinforcing staircase or allocating safe room. | Regulatory updates<br>• setback dimensions and utilization |

| | Scale of intervention | | Opportunity | Needs |
|---|---|---|---|---|
| | **Title** | **Details** | | |
| **2** | Building reconstruction | Reconstructing specific buildings in relatively intact surroundings.<br>This includes buildings which are heavily damaged or completely destroyed. | Opportunity to:<br><br>1. Enhance sustainability:<br>• energy-efficient systems,<br>• passive design strategies,<br><br>2. Solve per-war urban problems:<br>• Car parking (underground or in the backyard)<br>• Safe rooms inside each dwelling<br>• Bomb shelters. | Regulatory updates<br>• building heights, setbacks, and built-up area.<br>• Sustainable design standards<br><br>Desing booklets:<br>• Including design solutions, building materials, thermal insulation solutions and so on |
| **3** | Urban blocks reconstruction | This includes reconstructing complete urban blocks or a group of adjacent buildings, inside refugee camps or urban centres. | Opportunity to:<br><br>1. Follow all criteria mentioned in this document on each scale<br><br>2. Solve per-war urban problems:<br>• Car parking<br>• Open spaces<br>• Bomb shelters<br>• Safe rooms (zones) | Regulatory updates<br><br>Urban design for the complete block<br><br>Updated urban masterplan |
| **4** | Neighborhoods Reconstruction New neighbourhoods | Reconstruction of complete neighborhoods including buildings, open spaces, streets network as well as infrastructure.<br>Or construction of completely new neighbourhoods | Opportunity to:<br><br>1. Follow all criteria mentioned in this document on each scale<br><br>2. Solve per-war urban problems<br>• Car parking<br>• Open spaces<br>• Safe rooms (zones)<br>• Mobility | Urban design for the complete<br><br>neighbourhood<br>Updated urban masterplan |

| | Scale of intervention | | Opportunity | Needs |
|---|---|---|---|---|
| | **Title** | **Details** | | |
| **5** | Road's network | Reconstruction and improvement of streets network | Opportunity to:<br>1. Follow all criteria mentioned in this document on each scale<br>2. Solve per-war urban problems<br>• Public transportation<br>• Traffic congestion<br>• Pedestrian movement<br>• Regional connection | Updated urban masterplan.<br><br>Updated regional plan |
| **6** | Infrastructure reconstruction | repairing the grid, connecting inhabitable buildings with the grid. It also includes installing long-term, resilient and sufficient urban infrastructure | Opportunity to<br>1. Install underground infrastructural networks (water, electricity, telecommunication, gas and so on)<br>2. Install "Sand Batteries" to store electricity generated from solar or wind energy | Updated urban masterplan.<br><br>Updated regional plan |
| **7** | Public facilities and services | This includes the reconstruction of facilities for health, education, police, legal system, commerce, seaport, water desalination and so on. | Opportunity to<br>1. Rethinking the locations to decentralize these services.<br>2. Some building might have blast resistance measure.<br>3. Incorporate safe shelters and storages. | Updated urban masterplan.<br><br>Updated regional plan. |

# B.FUTURE EXPANSION

*By Dr. Yaser Abu Hashim*

Master plans should delineate the prospective growth of urban centers and new development zones. The expansion of cities in the future should be aligned with the primary goals of the regional master plan of the Gaza Strip, alongside municipal recommendations. A clear focus on climate adaptation should be adopted to account for long-term environmental changes and resilience.

In the context of Gaza's post-war reconstruction, where 80% of cities like Rafah, Kahn Younis Dair Al-Balah, Beit Hanoun und Beit Lahia have been destroyed, there is an opportunity to rethink urban planning strategies. Instead of continuing with horizontal expansion, which consumes valuable land and rural areas, the focus should be on more sustainable and efficient urban development models. These models can foster resilience, preserve agricultural land, and ensure a balanced relationship between urban and rural areas.

**Alternative Urban Planning Approaches for Gaza's Reconstruction**

## VERTICAL DENSIFICATION (HIGH-DENSITY DEVELOPMENT)

Given the extensive destruction in cities, vertical densification presents an opportunity to rebuild in a way that accommodates more people and functions without spreading into rural zones:

1. High-rise residential and commercial buildings can be developed in urban centers to optimize land use and increase housing capacity within the existing city footprint.
2. Mixed-use buildings, which combine residential, commercial, and civic functions, will reduce the need for extensive land use and provide essential services in one location, improving accessibility and reducing transportation needs.
3. Adding stories to existing structures where possible could increase capacity without taking up more space, making urban centers denser while maintaining green areas.

**Benefits of Limiting Horizontal Expansion**

1. **Preservation of Rural and Agricultural Land:** By avoiding horizontal expansion, Gaza's valuable agricultural land will be protected, supporting food security and local economies.
2. **Compact and Resilient Cities:** Compact cities are more resilient, easier to manage, and can foster a sense of community while reducing infrastructure costs.
3. **Environmental Sustainability:** Controlling urban sprawl helps preserve ecosystems and reduces the environmental impact of urbanization, contributing to Gaza's long-term ecological recovery.
4. **Efficient Resource Use:** Building upwards and using space efficiently within cities ensures that resources are concentrated where they are most needed, reducing the need for extensive transportation and infrastructure expansion.

## INFILL DEVELOPMENT

Reconstruction efforts should focus on utilizing vacant and underused spaces within cities rather than expanding into rural lands:

1. **Repurpose destroyed or abandoned buildings and vacant lots** within the city limits for new housing, businesses, and social infrastructure. This will prevent urban sprawl and keep the cities compact.
2. **Temporarily use vacant spaces** for short-term housing solutions (such as modular housing or temporary shelters) to accommodate displaced populations while permanent housing is built.

## URBAN REGENERATION AND SMART GROWTH

Rather than extending cities outward, focus on regenerating destroyed urban areas and using smart growth principles:

1. **Revitalize damaged districts** by rebuilding them with modern, sustainable urban designs that enhance urban density, mixed-use spaces, and environmental sustainability.
2. **Redevelop abandoned sites** within urban areas for new residential and commercial purposes, ensuring efficient land use.

## COMPACT CITY DEVELOPMENT

To preserve open spaces between cities, Gaza should adopt a compact city approach, focusing on the densification and functionality of urban areas:

1. **Concentrate housing, services, and amenities** in defined urban areas, ensuring that residents can access everything they need within a short distance. This reduces pressure to expand into rural areas.
2. Protect open land between cities as **agricultural or natural green belts** to ensure food security, biodiversity, and resilience against future crises.

## CLUSTER-BASED URBAN PLANNING

Instead of unchecked urban sprawl, **cluster-based development** can maintain clear boundaries between urban and rural zones:

1. **Develop satellite cities** or clusters around major urban centers, connected by efficient public transport systems. Each cluster can have its own housing, businesses, and public services, reducing the need for further sprawl.
2. **Design urban clusters** with green zones, preserving natural and agricultural land between them to maintain rural integrity and promote ecological sustainability.7.

## TRANSIT-ORIENTED DEVELOPMENT (TOD)

Urban growth should focus on **developing around existing and future public transportation hubs:**

1. Rebuild cities around efficient public transit systems such as **bus rapid transit, electric trams, and railways**, which will reduce car dependency and traffic congestion.
2. **Develop high-density residential and commercial zones** around transit nodes to make cities more walkable and reduce the need for horizontal expansion into rural zones.

## SUSTAINABLE EXPANSION STRATEGIES

Future expansion of cities should be planned with sustainability in mind:

1. Focus on climate-resilient designs for buildings and infrastructure, ensuring cities are prepared for environmental challenges such as flooding or extreme weather.
2. Implement smart technologies in rebuilding efforts to manage resources efficiently, such as water management systems, smart grids for electricity, and energy-efficient construction techniques.

## TECHNOLOGICAL INFRASTRUCTURE:

Develop modern digital and technological infrastructures (e.g., internet access, smart city solutions) to support sustainable and innovative urban development.

### Conclusion

In Gaza's reconstruction phase, focusing on vertical densification, compact cities, and urban regeneration offers a sustainable alternative to horizontal expansion. These strategies will help preserve the country's valuable rural and agricultural lands while creating resilient, modern urban areas that meet the needs of the population. Efficient land use planning, integrated with smart technologies and sustainable practices, will not only rebuild Gaza's cities but also set them on a path to long-term sustainability and growth.

## C.ECONOMIC SECTOR DEVELOPMENT OF GAZA: Policy Framework: Envisioning a Social Economy for Gaza's Reconstruction

*By Mr. Tareq Da'na*

### Preamble:

Recognizing the urgent need for a comprehensive and inclusive approach to Gaza's reconstruction, this policy framework aims to prioritize the principles of social justice, participation, and human dignity in the rebuilding of Gaza's economy. The reconstruction process should seize the opportunity to lay the foundations for a more equitable, sustainable, and resilient economic future, rather than merely restoring the status quo ante or extending the Palestinian Authority-ruled economic system of the West Bank.

### Guiding Principles:

1. Social Economy Model: The reconstruction process shall adopt a social economy model, wherein Gazan society is heavily involved in shaping the direction and priorities of the economic rebuilding effort. This approach ensures that the reconstruction is responsive to the immediate needs of the population and reflective of their long-term aspirations and values.
2. Community Engagment: Local communities and civil society organizations shall play an active role in the decision-making process related to economic reconstruction. This participation fosters a sense of ownership and collective responsibility for Gaza's economic future.
3. Holistic and Integrated Economic Recovery and Development: The economic planning for Gaza's reconstruction shall prioritize the development of a robust and diversified productive base, recognizing and harnessing the interplay between key sectors such as agriculture, fishery, and industry. This approach maximizes the potential for job creation, resource efficiency, and value addition.

**Primary sectors:**

## 1. INFRASTRUCTURE

Rebuilding critical infrastructure such as roads, electricity grids, water supply systems, and telecommunications networks is essential for laying the foundation for inclusive and sustainable economic recovery in Gaza. The infrastructure restoration model should play a key role in the well-being of communities and the environment.

- **Community-driven infrastructure projects:** community-driven infrastructure projects engage local communities in the planning, design, and implementation of infrastructure restoration efforts. This can include the use of participatory planning processes, community contracting, and local labor and materials. This can ensure that infrastructure projects are responsive to local needs and priorities, and that the benefits of these projects are equitably distributed.

- **Social infrastructure:** In addition to physical infrastructure, it is essential to prioritize the restoration and rebuilding of social infrastructure, such as schools, hospitals, and community centers. These facilities should be accessible and affordable to all, regardless of income or social status, in order to promote social cohesion and resilience.

- **Green infrastructure:** Policymakers should prioritize the development of green infrastructure, such as renewable energy systems, water conservation and treatment facilities, and sustainable transportation networks. These investments can help to reduce Gaza's dependence on fossil fuels and improve the environmental sustainability of infrastructure systems. Policymakers should also work to promote the use of green building materials and practices in infrastructure restoration efforts.
- **Infrastructure cooperatives and social enterprises:** Policymakers should support the development of infrastructure cooperatives and social enterprises that prioritize social and environmental objectives alongside economic ones. These organizations can play a key role in the restoration and management of infrastructure systems, ensuring that they are responsive to the needs of communities and the environment. Policymakers should provide technical and financial support to these organizations, as well as create an enabling legal and regulatory environment for their operation.

- **Capacity building and skills development:** Policymakers should invest in capacity building and skills development programs to ensure that local communities have the knowledge and skills needed to participate in infrastructure restoration efforts. This can include training programs on sustainable infrastructure design and construction, as well as on the operation and maintenance of infrastructure systems.

- **Infrastructure financing:** to mobilize private and public capital for infrastructure projects, while also ensuring that the social and environmental benefits of these projects are prioritized.

- **Resilient infrastructure:** should prioritize the development of resilient infrastructure systems that can withstand future shocks and wars. This can include the use of risk assessment and management tools, as well as the incorporation of redundancy and flexibility into infrastructure design and operation. Policymakers should also work to promote the use of nature-based solutions, such as green infrastructure and ecosystem restoration, to enhance the resilience of infrastructure systems.

## 2. AGRICULTURE

Agriculture is a critical sector of Gaza's economy, providing livelihoods for a significant portion of the population and contributing to food security. However, this sectors have been heavily impacted by the war, with damage to agricultural land, water resources and infrastructure, as well as restrictions on access to land. Revitalizing the agricultural sector through strategic investments and market linkages can play a key role in Gaza's economic reconstruction and development.

- **Irrigation systems:** Water scarcity is a major constraint on agricultural production in Gaza, exacerbated by damage to water infrastructure during the war. Investing in the repair and upgrading of irrigation systems, including the use of water-efficient technologies such as drip irrigation and rainwater harvesting, can help to improve the productivity and resilience of Gaza's agricultural sector. These investments should be coupled with capacity building programs on the use and maintenance of new irrigation technologies.

- **Equipment and infrastructure:** The war has resulted in widespread damage to agricultural equipment, storage facilities, and processing plants. Policymakers should prioritize investments in the repair and replacement of this equipment and infrastructure, including tractors, greenhouses, cold storage facilities, and packaging plants. These investments can help to improve the efficiency and quality of agricultural production, as well as reduce post-harvest losses.

- **Land rehabilitation:** The war has resulted in significant damage to agricultural land, including the destruction of crops, soil erosion, and land degradation. Policymakers should invest in land rehabilitation programs, including soil restoration, land leveling, and the removal of debris and unexploded ordnance. These programs should be coupled with efforts to improve land tenure security and access to land for smallholder farmers.

- **Crop diversification:** Gaza's agricultural sector is heavily dependent on a few key crops, such as strawberries, citrus, and vegetables. Promoting crop diversification can help to reduce risk and improve the resilience of the sector. Policymakers should invest in research and extension services to identify and promote new crop varieties that are well-suited to Gaza's climate and soil conditions. This can include the promotion of high-value crops, such as herbs and spices, as well as the introduction of new crops.

- **Agro-processing and value addition:** Investing in agro-processing and value addition can help to create new jobs and income opportunities in Gaza's agricultural sector. Policymakers should support the development of small and medium-sized agro-processing enterprises, such as frozen vegetables and fruites, juice factories, and packaging facilities. These enterprises can help to add value to Gaza's agricultural products and create new market opportunities.

- **Sustainable agriculture practices:** Promoting sustainable agriculture practices can help to improve the long-term productivity and resilience of Gaza's agricultural sector. This can include the adoption of conservation agriculture practices, such as minimum tillage and cover cropping, as well as the use of integrated pest management and organic farming methods.

- **Agri-business development:** Supporting the development of agri-businesses can help to create new jobs and income opportunities in Gaza's agricultural sector. Policymakers should provide business development services and access to finance for agri-entrepreneurs, including support for the development of business plans, market research, and product development. Policymakers should also work to create an enabling environment for agri-business development, including the streamlining of business registration and licensing procedures.

- **Agricultural cooperatives and associations:** Strengthening agricultural cooperatives and associations can help to improve the bargaining power and market access of small-scale farmers. Policymakers should provide support for the development and capacity building of these organizations, and to create an enabling legal and regulatory environment for cooperatives and associations.

## 3. FISHERIES

- **Access to fishing grounds:** One of the main challenges facing Gaza's fishing sector is the limited access to fishing grounds due to Israeli restrictions. Policymakers should secure a liberated sea to ensure greater access to fishing grounds for Gaza's fishers, including through the establishment of a designated fishing zone and the removal of restrictions on the movement of fishing boats. This can help to increase the productivity and profitability of the sector.

- **Modernization of fishing fleet:** Many of Gaza's fishing boats are old and outdated, lacking modern equipment and technology. Policymakers should invest in the modernization of the fishing fleet, including the provision of new boats, engines, and fishing gear. This can help to improve the efficiency and safety of fishing operations, as well as reduce post-harvest losses.

- **Aquaculture development:** Aquaculture, or the farming of fish and other aquatic species, can provide a sustainable alternative to capture fisheries. Policymakers should invest in the development of aquaculture in Gaza, including the establishment of fish farms and hatcheries. This can help to increase the supply of fish and create new job opportunities in the sector.

- **Value chain development:** Developing the value chain for fisheries products can help to create new job and income opportunities in the sector. Policymakers should invest in the establishment of fish processing and packaging facilities, as well as the development of new fish products, such as froze, smoked and canned fish.

- **Market linkages:** Strengthening market linkages is critical for the success of Gaza's fisheries sectors. Policymakers should work to establish and strengthen value chains, connecting producers with processors, distributors, and consumers. This can include investments in transportation and logistics infrastructure, as well as the development of market information systems and e-commerce platforms. Policymakers should also work to promote the export of Gaza's fishery products to the West Bank and regional markets.

- **Quality and safety standards:** Ensuring the quality and safety of fisheries products is critical for accessing high-value markets and protecting public health. Policymakers should invest in the development and enforcement of quality and safety standards for fish handling, processing, and storage. This can include the establishment of testing laboratories and the training of fishers and processors on best practices for food safety.

- **Fisheries cooperatives and associations:** Strengthening fisheries cooperatives and associations can help to improve the bargaining power and market access of small-scale fishers. Policymakers should provide support for the development and capacity building of these organizations, including training on organizational management, financial management, and marketing. Policymakers should also work to create an enabling legal and regulatory environment for cooperatives and associations.

- **Fisheries research and data collection:** Investing in fisheries research and data collection can help to inform sustainable fisheries management and development. Policymakers should support the establishment of fisheries research institutes and the collection of data on fish stocks, catch rates, and other key indicators. This can help to guide decision-making on fisheries management and investment.

- **Community-based fisheries management:** Promoting community-based fisheries management can help to ensure the sustainable use of fisheries resources and the equitable distribution of benefits. Policymakers should work to establish co-management arrangements between public agencies and fishing communities, as well as to strengthen the capacity of fishing communities to manage their own resources.

Investing in these key areas can help to revitalize and strengthen Gaza's fishing sector, creating new jobs and income opportunities, improving food security, and building greater economic resilience. A thriving fishing sector can also help to reduce Gaza's dependence on imports and contribute to long-term development. However, it is important to note that the success of these interventions will depend on addressing the underlying political and security challenges facing Gaza, including ending the Israeli control over the sea and the lifting of the blockade.

## 4. MANUFACTURING

There is a critical need for a more inclusive approach to revitalizing Gaza's manufacturing sector, one that not only addresses the immediate challenges of reconstruction and recovery but also lays the foundations for a more sustainable and equitable economic future. The social economy model, with its emphasis on community empowerment, social and environmental objectives, and participatory governance, could offer a promising framework for achieving these goals. The social economy model could offer several advantages for revitalizing the manufacturing sector. For example, by promoting community ownership and participatory governance, social enterprises and cooperatives could help ensure that the benefits of economic growth are more equitably distributed and that local communities have a greater say in the direction and priorities of the reconstruction process.

- **Establishing a participatory governance framework:** The reconstruction process should be guided by a participatory governance framework that engages local communities, workers, and businesses in the planning and decision-making processes related to the manufacturing sector's recovery and development. This could involve establishing multi-stakeholder forums, such as industry councils or community advisory boards, that bring together representatives from the government, private sector, civil society, and international partners to identify priorities, coordinate activities, and monitor progress.

- **Providing technical and financial support to social enterprises and cooperatives:** The government and international partners should provide targeted technical and financial support to social enterprises and cooperatives in the manufacturing sector, particularly those that prioritize social and environmental objectives such as job creation, skills development, and green production. This could include providing grants and equity investments, as well as business development services, such as training, mentoring, and market research.

- **Investing in sustainable and resilient industrial infrastructure:** The reconstruction process should prioritize the development of sustainable and resilient industrial infrastructure, such as renewable energy systems, water conservation and treatment facilities, and waste management systems. This could involve establishing eco-industrial parks that cluster social enterprises and cooperatives around shared infrastructure and services, as well as promoting the use of green building materials and design principles in the construction of new factories and workshops.

- **Promoting the adoption of green manufacturing practices and technologies:** The government and international partners should promote the adoption of green manufacturing practices and technologies, such as resource efficiency, cleaner production, and circular economy principles, through a combination of incentives, regulations, and capacity building programs. This could involve establishing green innovation funds that provide grants and loans to social enterprises and cooperatives that develop and adopt sustainable production practices, as well as setting environmental standards and certification schemes for the manufacturing sector.

- **Facilitating access to markets and finance:** The government and international partners should facilitate access to markets and finance for social enterprises and cooperatives in the manufacturing sector, through a range of trade facilitation measures, preferential procurement policies, and innovative financing mechanisms. This could involve establishing export promotion agencies that provide market intelligence, logistical support, and quality certification services to social enterprises and cooperatives, as well as creating social impact investment funds that mobilize private and public capital for the sector's development.

- **Strengthening the linkages between the manufacturing sector and other key sectors:** The reconstruction process should aim to strengthen the linkages between the manufacturing sector and other key sectors, such as agriculture, construction, and services, through value chain development and cluster promotion initiatives. This could involve establishing agro-processing parks that link small-scale farmers with food processing social enterprises and cooperatives, as well as creating construction material clusters that integrate green building material producers with sustainable construction firms and developers.

- **Investing in skills development and vocational training:** The government and international partners should invest in skills development and vocational training programs that equip young people and women with the technical and entrepreneurial skills needed to participate in the manufacturing sector's recovery and growth. This could involve establishing community-based training centers that provide hands-on learning opportunities in green manufacturing practices and technologies, as well as creating apprenticeship and mentorship programs that connect aspiring entrepreneurs with experienced social enterprise and cooperative leaders.

## SMALL AND MEDIUM-SIZED ENTERPRISES (SMES)

Supporting the recovery and growth of small and medium-sized enterprises (SMEs) in Gaza is crucial for promoting inclusive and sustainable economic development. SMEs should be interlinked with cooperatives, mutual societies, associations, and social enterprises, and to prioritize social and environmental objectives alongside economic ones. In order to rebuild and expand the SMEs, it's important to address the following:

- **Financial assistance:** SMEs, as central part of the envisioned social economy framework, often face challenges in accessing finance, as they may prioritize social impact over financial returns. Policymakers should develop targeted financial instruments, such as impact investment funds, social impact bonds, and crowdfunding platforms, to provide patient capital and grant funding to SMEs. These instruments should be designed to support the specific needs of social enterprises, such as longer time horizons and flexible repayment terms.
- **Technical support:** SMEs require specialized technical support to develop and scale their social and economic impact models. This can include training programs on entrepreneurship, impact measurement, and stakeholder engagement. Incubators and accelerators focused on the SMEs social economy can provide tailored support to help enterprises refine their business models, develop partnerships, and access markets.

- **Market access:** Policymakers should work to create market opportunities for SMEs, both within Gaza and beyond. This can include promoting social procurement policies that encourage the public sector and large corporations to purchase goods and services from these enterprises. Policymakers can also support the development of social impact markets, such as social impact investment platforms, to connect social enterprises with impact-oriented investors and buyers.

- **Enabling environment:** Creating an enabling policy and legal environment for the social economy is essential for the growth of SMEs. This includes recognizing these enterprises as a distinct legal form, providing tax incentives and subsidies for social impact activities, and reducing regulatory barriers. Policymakers should also work to raise awareness and build capacity around the social economy, including through public education campaigns and university programs.

- **Sectoral focus:** The social economy can play a particularly important role in certain sectors, such as manifuctering, agriculture, fishery, energy and social services. Policymakers should identify priority sectors where SMEs can have the greatest impact and develop targeted support programs to help these enterprises scale up their operations. For example, in the agroindustries sector, enterprises can help to provide affordable food products to Gaza's communities.

# D.PLANNING AND DESIGN CONCEPTS

In this section we provide a list of design and planning concepts that we consider worth understanding and utilizing in the post war efforts. These design and planning teams are advised to study these concepts and ideas as this will guide to updated or even new urban solutions to multiple issues related urban development in the Gaza Strip

## REGIONAL SCALE

### 1. Smart Growth and New Urbanism

These approaches emphasize sustainable, walkable communities with mixed-use development, prioritizing high-density urban planning and transit-oriented design. They aim to reduce urban sprawl, fostering livable environments that support sustainable growth and a high quality of life. Planners use Smart Growth and New Urbanism to design compact, efficient urban areas that integrate green spaces, promote public transit, and reduce car dependence. These principles are especially relevant for rapidly growing regions, ensuring cities develop in a way that enhances both livability and environmental sustainability

## URBAN SCALE

There are numerous planning concepts and ideas that can be explored on this scale of interventions to be incorporated into the masterplan development of each urban center in the Gaza Strip. Below are some of the most relevant and up-to-date concepts:

### 1. 15 minutes city

This concept entails guidelines and recommendations aimed at creating a more vibrant, functional, and resilient urban environment. It proposes that within a 15-minute walk or bike ride radius from one's home, individuals should have access to essential amenities such as shops, schools, entertainment sites, green spaces, cultural or religious centres, sports facilities, public transportation, and potentially workplaces. Implementing the principles of the 15-minute city strengthens civilian resilience by ensuring accessibility even during times of infrastructure disruption, such as when transportation is unavailable, main streets are unsafe, or parts of the city are affected by war or occupied.

## 2. Social-ecological urbanism

Social-ecological urbanism is a holistic approach to urban planning and design combining social ecology and ecological considerations principles. The goal is to develop sustainable and resilient cities by recognizing the interconnectedness of social, economic, and environmental systems. This approach addresses complex urban challenges through integrated solutions to promote social justice, environmental sustainability, and community well-being. Key components of social ecological urbanism include community engagement, sustainable design practices, social equity, place-based planning, and participatory decision-making. By incorporating these principles, social-ecological urbanism aims to create cities that are environmentally friendly, socially inclusive, and resilient for all residents.

## 3. Circular Economy in Urban Design:

Integrating circular economy principles in city planning, focusing on resource efficiency, reuse, recycling, and minimizing waste in construction and daily life. This will help Gaza rebuild cities sustainably while minimizing environmental impact.

## 4. Smart Cities and Digital Infrastructure:

Incorporating smart city technologies such as IoT (Internet of Things) and AI for better management of energy, water, waste, and traffic. Digital infrastructure could enable more efficient use of resources and services.

## 5. Community-Led Development:

Engage local communities in the design and decision-making process. By incorporating community feedback, cities can address local needs while fostering a sense of ownership and social cohesion.

## 6. Smart Cities and Digital Infrastructure

Leveraging technology to make cities more efficient, resilient, and responsive to the needs of their residents. This could include smart grids, public Wi-Fi, and the integration of digital tools for public services and management of infrastructure.

### 7. Inclusive Urbanism

Ensuring that rebuilding efforts are inclusive of all groups, particularly marginalized populations such as the elderly, disabled, and displaced persons. This concept emphasizes accessibility, affordability, and social equity in urban design.

## NEIGHBOURHOOD SCALE

There are a variety of concepts and ideas that can provide substantial conceptual background in the planning and designing of the new or destroyed neighbourhoods in the Gaza Strip. These concepts provide can guide the design to materialize multiple principles and concepts presented in this document, therefore, design teams are encouraged to address the practicalities and applicability of these concepts. Below are some of the most relevant and up-to-date concepts.

### 1. My Neighbourhood

The UN-Habitat Urban Lab has published "My Neighborhood[3]", a checklist of urban design principles for creating more sustainable and resilient cities. The guide contains actions applicable at the neighbourhood scale and strives to present an integrated approach that responds to key sectors such as transportation, local urban initiatives, housing, public spaces, utilities, and more.

UN-Habitat's publication is divided into five themes, each highlighting desirable aspects of urban life: Compact City, Connected City, Inclusive City, Vibrant City, and Resilient City.

3 https://drive.google.com/file/d/1000RdkgPVhtFV8hqmtdFoY_558bmLset/view?usp=sharing

## 2. Mixed-use neighbourhoods

Mixed-use neighbourhoods offer many advantages, including feelings of safety, decreased dependence on public transportation, cultivation of community cohesion, and the ability to cater to diverse community needs in everyday life and periods of conflict. These neighbourhoods typically integrate various functions such as commercial, residential, artisanal, and recreational facilities, green spaces, and transportation hubs.

The design and arrangement of ground-level spaces are particularly crucial. They significantly impact the overall neighbourhood quality and its capacity to foster vibrant social interactions. Moreover, during times of conflict, the ground-floor environment plays a pivotal role in bolstering resilience.

To optimise the potential of ground-level spaces, considerations may include incorporating features like gardens, retail establishments, productive areas, or workshops. These productive spaces and workshops should be designed with adaptability in mind, capable of accommodating a range of functions and activities. This flexibility enables these spaces to respond effectively to evolving needs, serving as dynamic hubs that enhance neighbourhood resilience.

## 3. Tactical Urbanism

The term tactical urbanism is often used to refer to low-cost, small-scale, short-term interventions meant to inspire long-term change to the built environment, usually in cities, intended to improve local neighbourhoods and city gathering places. It is also commonly referred to as guerrilla urbanism, pop-up urbanism, D.I.Y. urbanism, urban acupuncture, and urban prototyping. In the context of postwar Gaza, this approach can be of great help in the immediate postwar recovery plan. .

## 4. Placemaking:

Placemaking is an approach to urban design that focuses on creating vibrant, inclusive, and people-centered public spaces that foster community connections and enhance the quality of life. It emphasizes collaboration among residents, local stakeholders, and designers to shape spaces that reflect the unique culture, needs, and aspirations of a community. By prioritizing elements such as accessibility, sociability, safety, and aesthetics, placemaking transforms underutilized areas into lively, meaningful places where people want to gather, interact, and engage with their environment. It's about creating spaces that feel authentic and foster a strong sense of belonging. In postwar Gaza, this approach can reflect Gaza's cultural identity and address immediate needs.

## 5. Biophilic Design

Given the considerable challenges such as stress and trauma stemming from Israeli attacks, land and air pollution, damaged sewerage systems, and extensive amounts of waste and debris, Biophilic Design emerges as a critical approach. It aims to support healing and creation of pleasant environments, crucially aiding in the purification and cleansing of Gaza's soil and air and it supports biodiversity and climate resilience.