



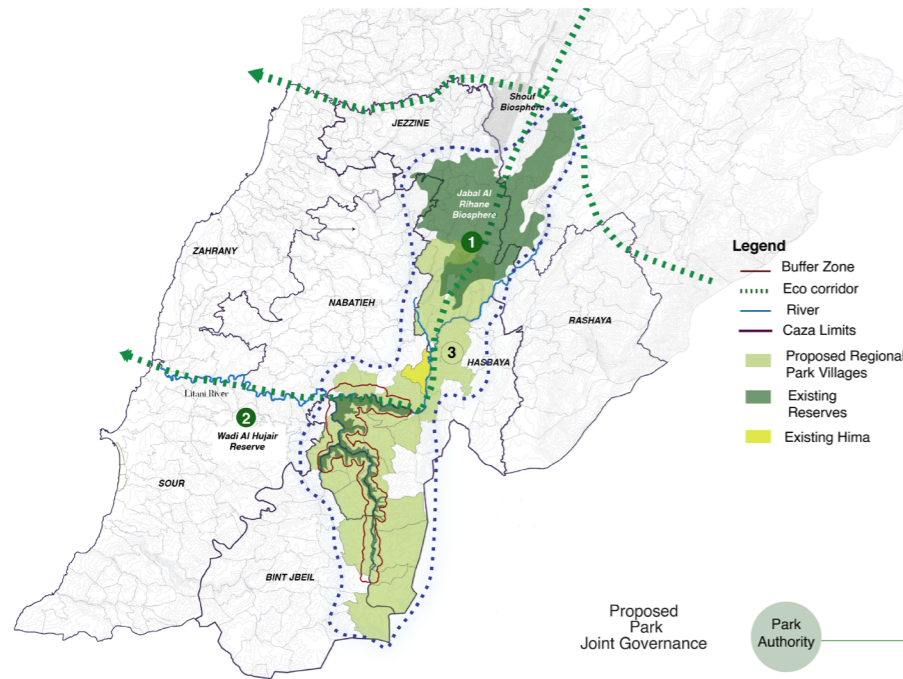
# PLACING AL HUJEIR VALLEY ON THE NATIONAL PHYSICAL MASTERPLAN

## SUB-NATIONAL STRATEGY

### Jabal Amel Natural Park

المنتزه الطبيعي لجبل عامل

On a sub-national level, we propose a conservation and nature project by establishing a natural park (10 years timeframe) composed of **Al Hujeir Valley and the Jabal Al Rihane Biosphere**, linking them through a **national eco-corridor** system that annexes the Lebanese Mountain Trail, an already existing project.



**Proposed Natural Park**  
Area: More than 10,000 hectares

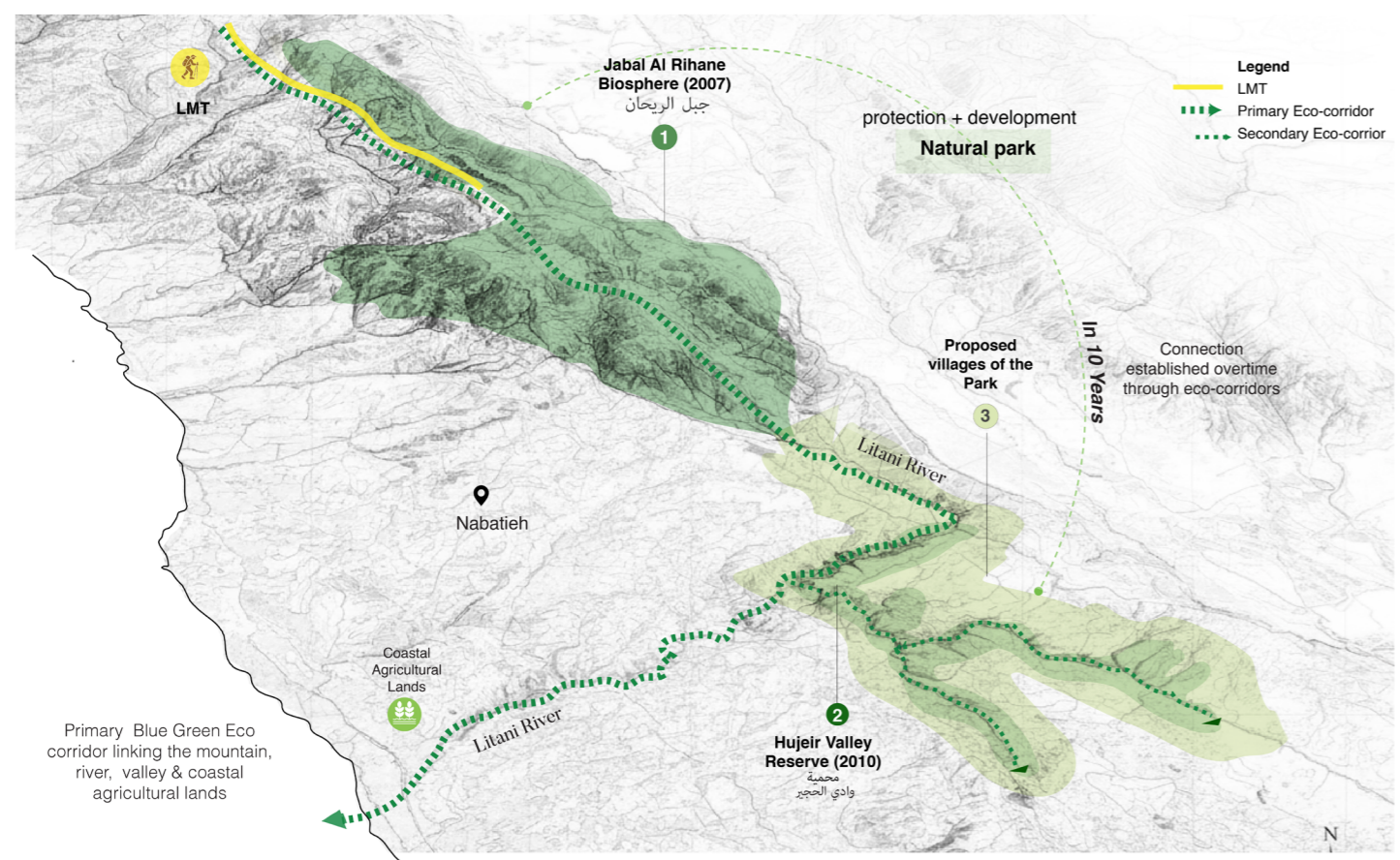
- Wadi Al Hujair (2010) (Law 121/2010)**  
Protected Area Type: Reserve  
Area: Approx 3,595 hectares
- Jabal Al Rihane Biosphere (2007)**  
Protected Area Type: Biosphere Reserve  
Area: 18,430 hectares.
- Proposed Park Villages**

**According to the Law 130/2019:**  
**A Nature Park is**  
"It refers to vast rural lands, partially inhabited, where the relationship between humans and nature over the years has made them a place distinguished by aesthetic, ecological, or cultural value, and in most cases characterized by high biodiversity and endowed with natural and cultural heritage and/or remarkable natural landmarks recognized at the national level and worthy of long-term protection. The management of natural park lands balances economic development with the protection of the natural, cultural, and heritage features they possess. The park is organized on the basis of a joint park project, the "Natural Park Charter," defined under this law."

### PARK CHARTER Law 130/2019

A Charter (Legal tool) signed for 8 years

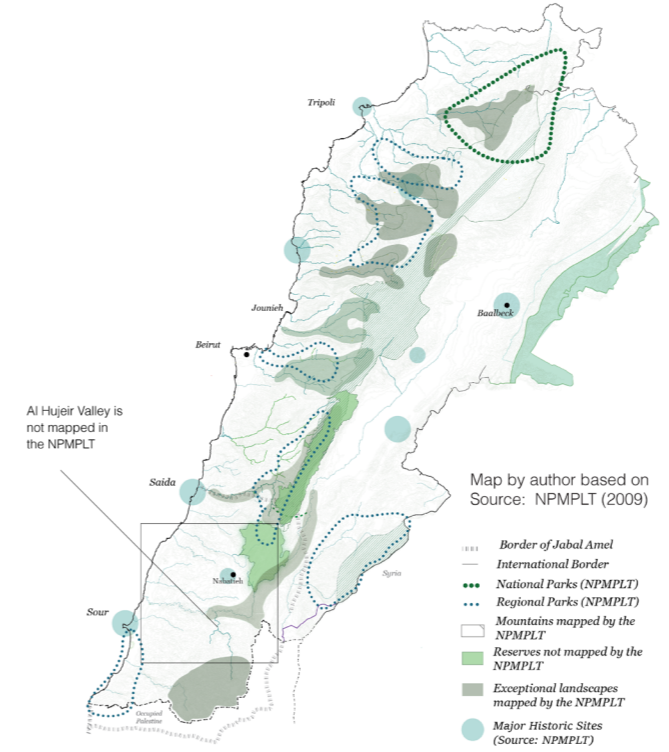
We propose that the following stakeholders sign the chart



## NATIONAL STRATEGY

### NPMPLT

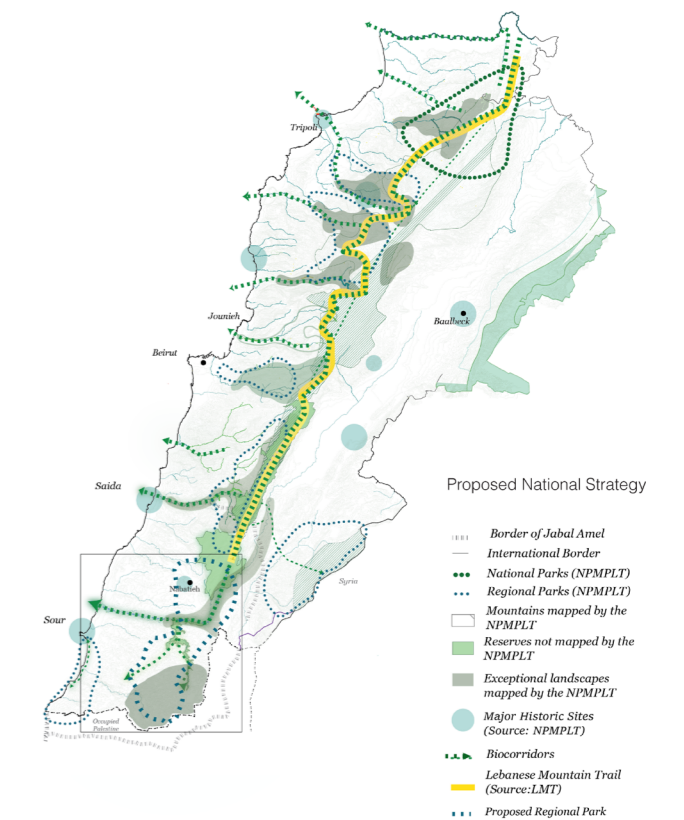
The National Physical Master Plan of the Lebanese Territory (NPMPLT) ignores **Al Hujeir Valley**, and the area is not valued within the plan. While the NPMPLT proposes a list of regional and national parks and highlights several exceptional landscapes, it fails to recognize the crucial role that the valley could play as a vital eco-corridor in South Lebanon and as a potential component of a regional



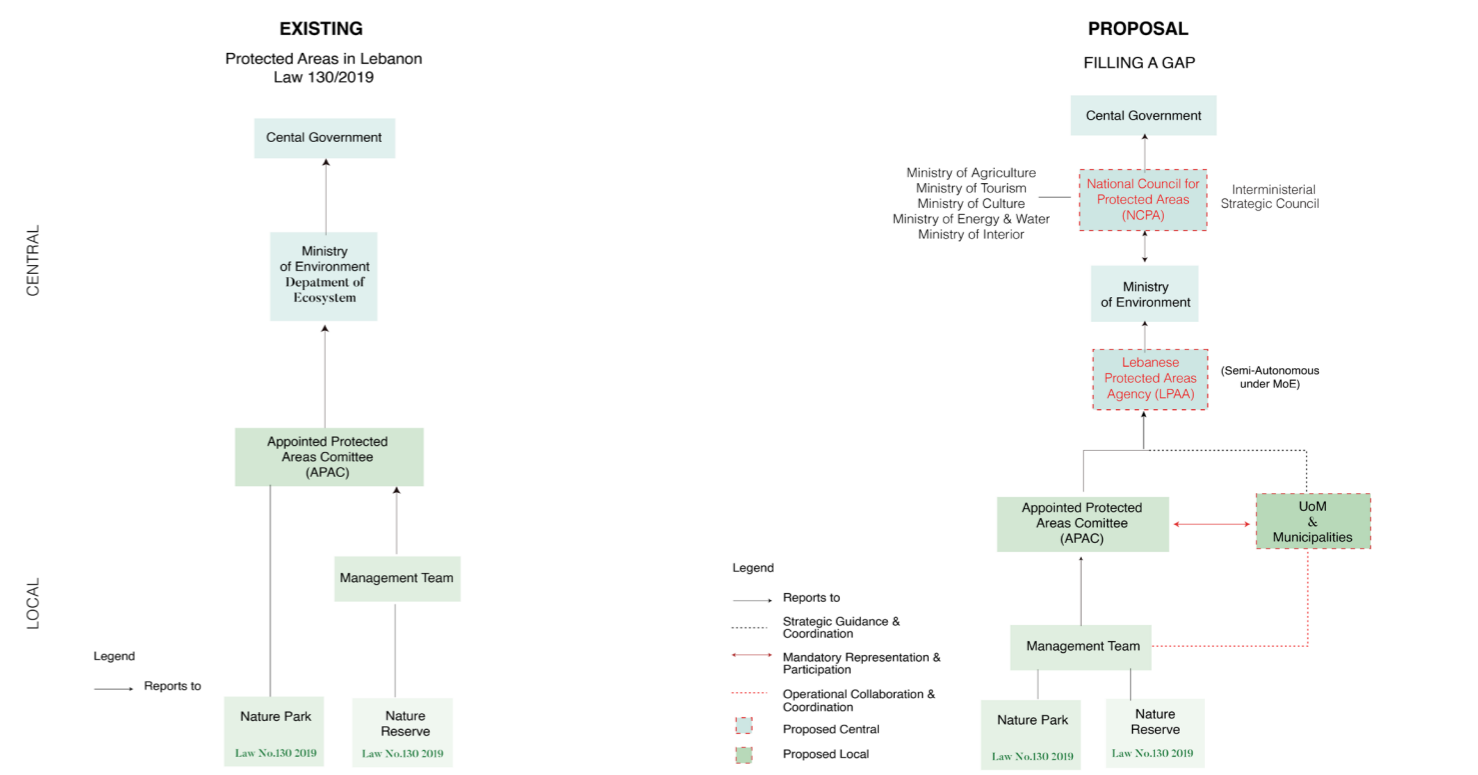
### PROPOSAL

#### PUT THE RESERVE ON THE NATIONAL MAP

Our goal is to make the reserve exist in the national agenda, ensure its long term protection and possibly also to re-qualify it environmentally and recreationally. We aim to establish connectivity through eco corridors and national/regional parks.



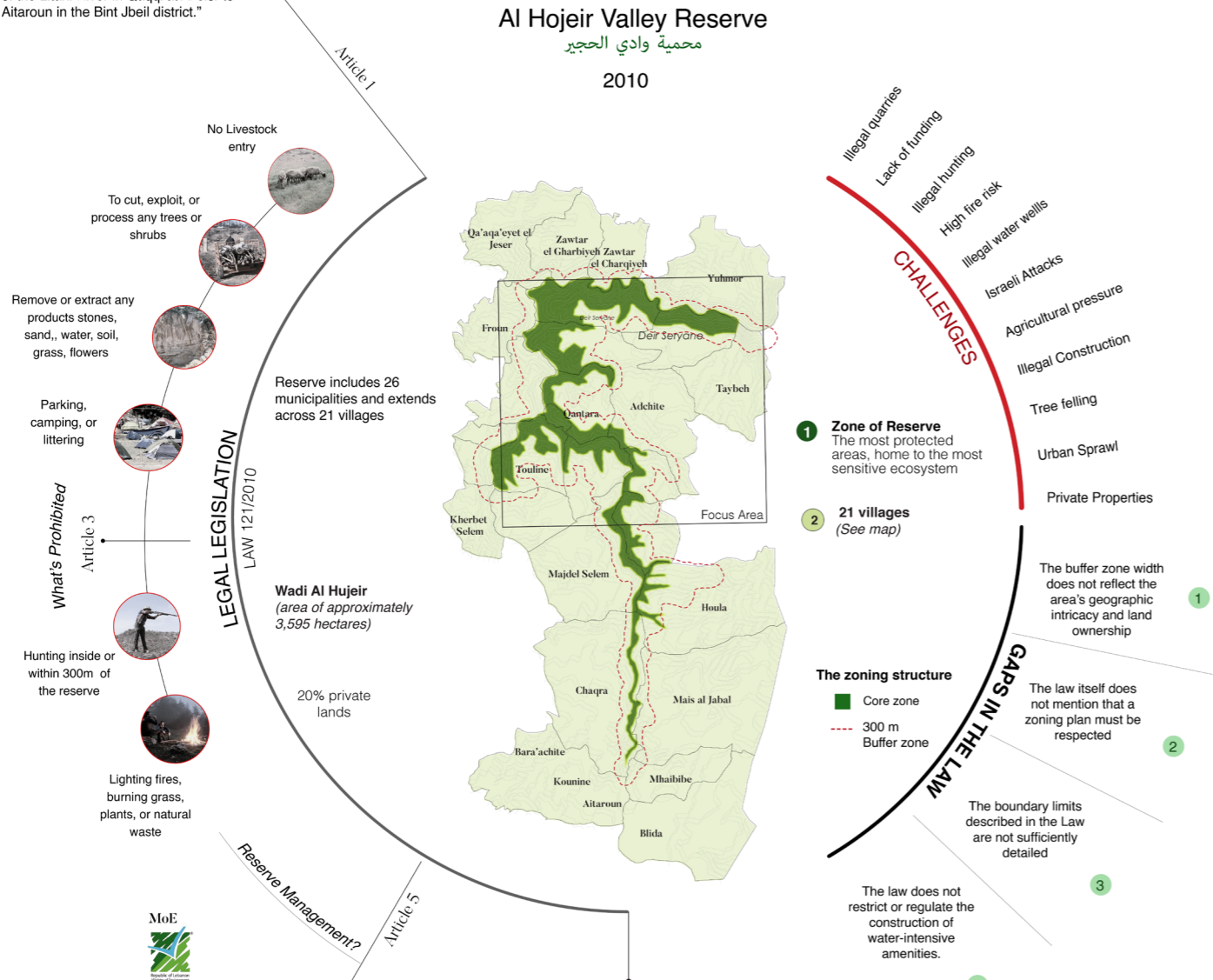
## Institutional structure



# LEGAL PROTECTION AND MANAGEMENT SHORTAGES IN THE VALLEY

## Al Hojeir Valley Reserve Legal Protection & Challenges

"Established on lands owned by the state & within communal lands from the course of the Litani River in Qaqi'at Al-Jisr to Aitaroun in the Bint Jbeil district."



جدول رقم 4 - التقييم التوجيهي الأولي والنظام التقني العام المقترح للحدود المحيطة بمحمية الحجر  
رقم التقييم التوجيهي الأولي والنظام التقني العام المقترح للحدود المحيطة بمحمية الحجر

الرقم	المنطقة	المساحة (هكتار)	الارتفاع (متر)	التقييم التوجيهي الأولي	النظام التقني العام المقترح
1	المنطقة المحيطة بالمحمية	100	100	100	100
2	المنطقة المحيطة بالمحمية	100	100	100	100
3	المنطقة المحيطة بالمحمية	100	100	100	100
4	المنطقة المحيطة بالمحمية	100	100	100	100
5	المنطقة المحيطة بالمحمية	100	100	100	100
6	المنطقة المحيطة بالمحمية	100	100	100	100
7	المنطقة المحيطة بالمحمية	100	100	100	100
8	المنطقة المحيطة بالمحمية	100	100	100	100
9	المنطقة المحيطة بالمحمية	100	100	100	100
10	المنطقة المحيطة بالمحمية	100	100	100	100

(Source: UMSARC, 2016)

# THE IMPACT OF WAR ON THE VALLEY'S ECOLOGICAL SYSTEMS

## DAMAGEN ESTIMATES IN SOUTH LEBANON

In 53 Villages across the governates of Nabatiyeh and South Lebanon

**Rubble**  
>8 million tonnes of debris in the South as estimated by UN Habitat

**Burnt Land**  
351 Fires caused by airstrikes  
108 km<sup>2</sup> (an area 4x larger than Beirut) of Burnt Land  
9.18 km<sup>2</sup> of land shelled with White Phosphorus

**Bomb Craters**

**Road Damage**  
49.68 km fully destroyed roads  
164.22 km of damaged roads

**Damaged Irrigation Systems**  
10.8 km<sup>2</sup> damaged field-irrigation systems

**Contaminated Water**  
26 water pumping stations were damaged  
28 water pipeline networks were damaged  
The use of white phosphorus munitions has raised serious concerns over water contamination

**Polluted Air**  
The usage of incendiary weapons and the spread of phosphorus contaminated dust has been documented

**Felled Trees and Damaged Crops**  
60 km<sup>2</sup> of damaged agricultural land  
\$111 million worth of damaged crops  
\$353 million loss for banana farms  
\$58 million loss in olive groves  
25% damaged olive groves  
\$16 million loss in Citrus  
60 Greenhouses burnt

**Threatened Biodiversity**  
13% forest loss  
64.8 km<sup>2</sup> burnt Oak and Pine tree forests  
32.4 km<sup>2</sup> burnt Orchard groves  
16% pastures loss  
17% river ecosystems  
20 times more phosphate levels in the Lower basin of Litani  
200,000 birds died  
700 cattle died  
\$533 million losses in livestock  
250 beehives damaged

It smells like death! At once, we lost everything!

A resident displaced from her border village

## WAR SCARS IN AL HUJEIR VALLEY & ITS SURROUNDINGS

**Rubble**  
A flattened building in Taybeh

**Burnt Land**  
Burnt land in Adchit of Chouair

**Bomb Craters**  
Bomb crater in Hajar Valley

**Road Damage**  
Damaged Road in Vissal of Hajar

**Damaged Irrigation Systems**  
A bombed irrigation channel

**Contaminated Water**  
Litani River contamination

**Polluted Air**  
White phosphorus polluting the valley air

**Felled Trees and Damaged Crops**  
Uprooted trees in South Lebanon

**Threatened Biodiversity**  
A deer saved from a wildfire in the valley

Sources:

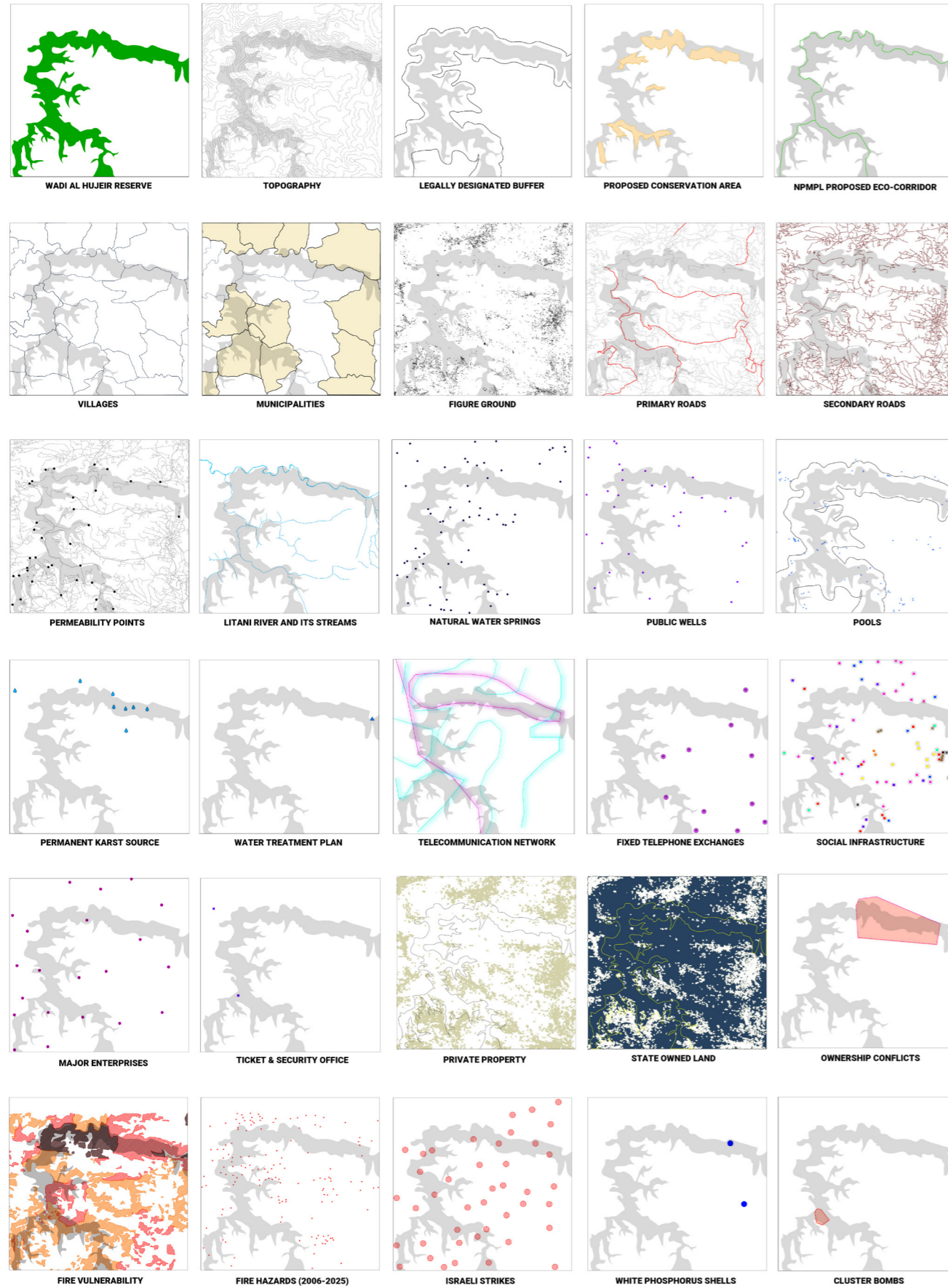
**Abu Jalal, al Qantara**  
They pulled the water pumps out of the ground and destroyed it. All the irrigation I had in the ground is now broken!

**Local Farmer, Tyre**  
I used to produce 30 to 40 oil canisters. This year, I can barely make one. We used to sell; Now, we'll buy

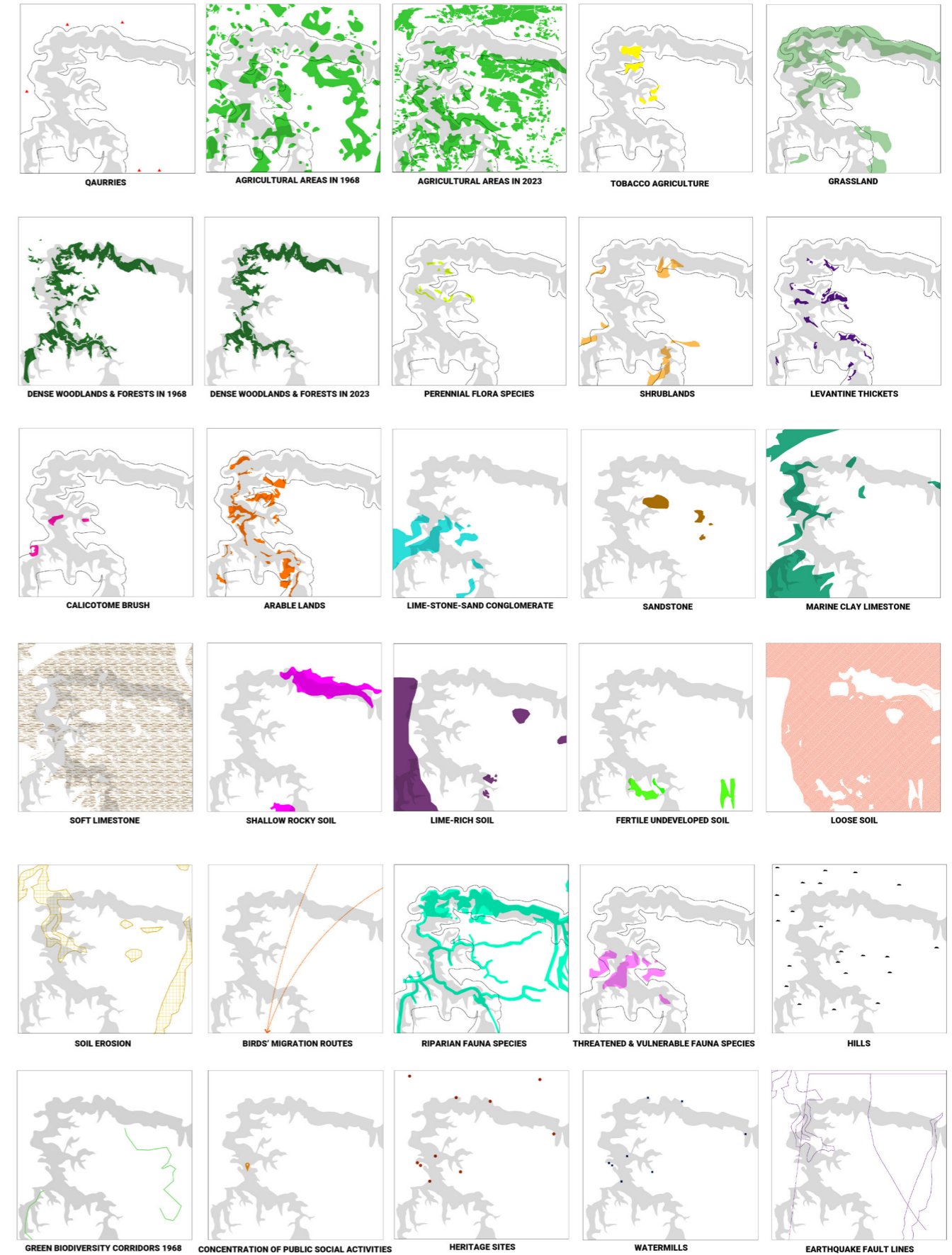
**George Khoury, Deir Mimas**  
I had a 1000 sqm here all planted with Olive and Carob trees. And look! It's all burnt now!

# METHODOLOGY: ANALYTICAL LAYERS

## Social, economic, mobility, ownership, and cultural layers

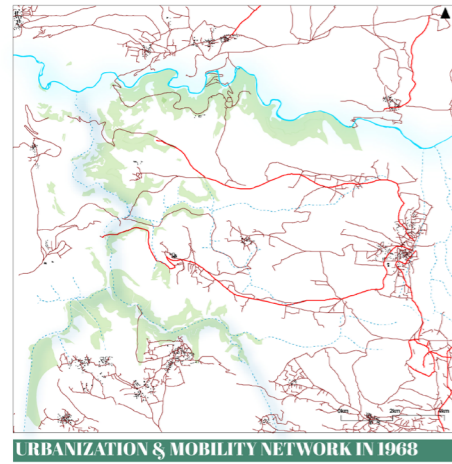


## Ecological systems and landscape layers

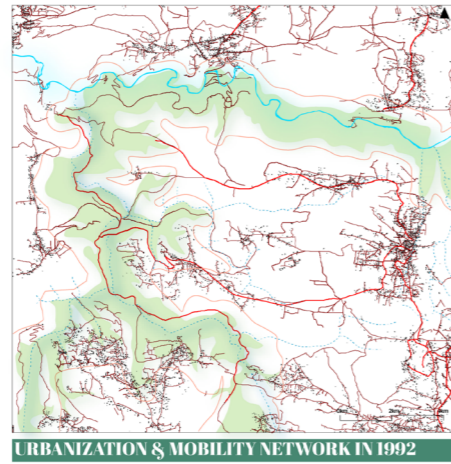


# SITE ANALYSIS AND KEY FINDINGS

## Urban Sprawl between 1968 and 2026

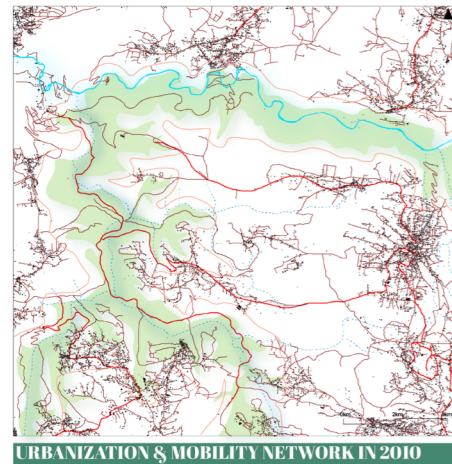


Small agriculture-reliant villages with agglomerations of few buildings existed around the valley in 1968.

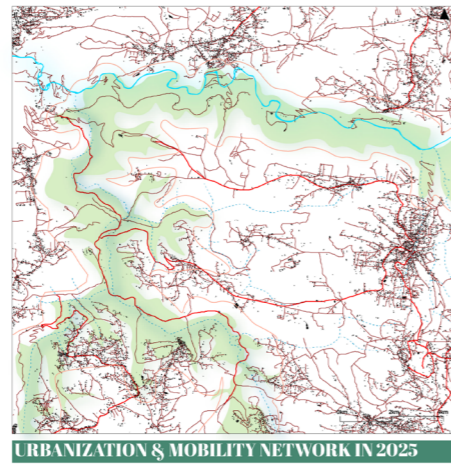


Wadi al Hujair was declared a "National Hema" by the ministry of agriculture in 1992.

Allowable Built-up Area  
**15-20%**



Wadi al Hujair was announced a nature reserve codified by law 121 on the 23rd of July 2010.

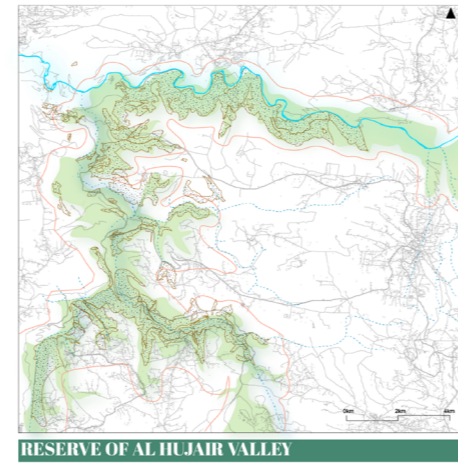


Today, Wadi al Hujair is threatened by uncontrolled urban sprawl supported by weak management and law enforcement

- Buildings
- Primary Roads
- Secondary Roads
- Litani River
- Waterway

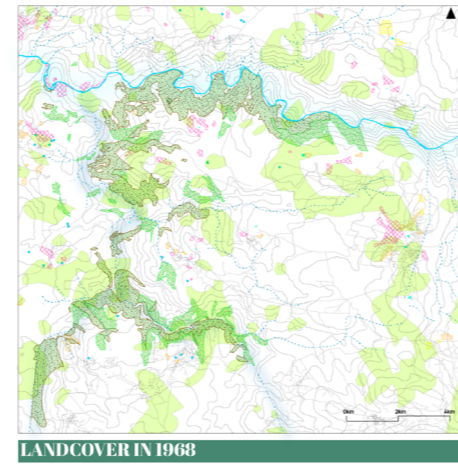
Around **40** non-residential structures are built within the buffer

## Landscape composition



- Wadi al Hujair Limits 2025
- Wadi al Hujair Limits 1968
- 300 Buffer
- Litani River

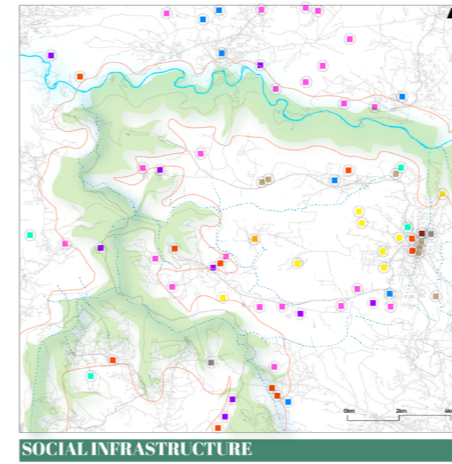
Area: **3,595 hectares**  
Making it the **2nd Largest Terrestrial Nature Reserve in Lebanon**



- All Hujair Valley
- Forest
- Leafy greens and tobacco
- Banana
- Apple
- Bushland
- Orchards
- Water spring-fountain
- Litani river
- Waterway
- Water pond

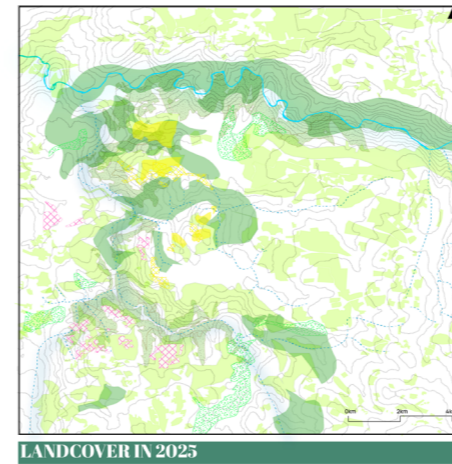
Sources: United Nations Development Programme (UNDP) - "Strengthening Nature Resilience Capacity - STN/Nature" project, funded by the Ministry of Foreign Affairs and International Cooperation of the Italian Republic through the Italian Agency for Development Cooperation (AICS), and implemented in coordination with the Ministry of Environment of Lebanon, 2020. Maps for Lebanon villages from 1968 by the Ministry of Defence

## Social Infrastructure



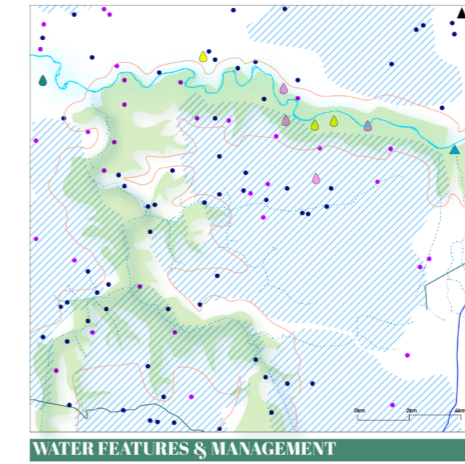
- Healthcare
- Educational
- Religious
- Sports
- Institutional
- Public Space
- Governmental
- Resorts
- B&Bs/Chalets
- Gas Station
- Diameter of 400 m

>20 B&B units with pools

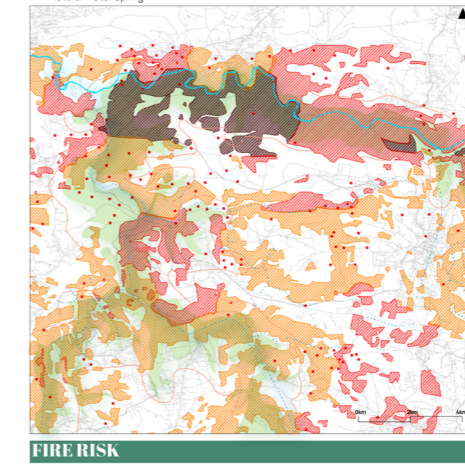


- Dense & open forests
- Grassland
- Croplands
- Shrublands
- Tobacco agriculture
- Forest Trees: 14 species (Most common of which is Oak)
- Plants: 36 species (Including medicinal, aromatic, and other types)
- Orchards: 10 species (Mainly within private properties)
- Mammals: 8 species (Most common of which are the fox, hyrax, hama, and wild boar)
- Birds: 42 species (Most common of which are the crow, sparrow, bee-eater, & shrike)

## Threats and risks



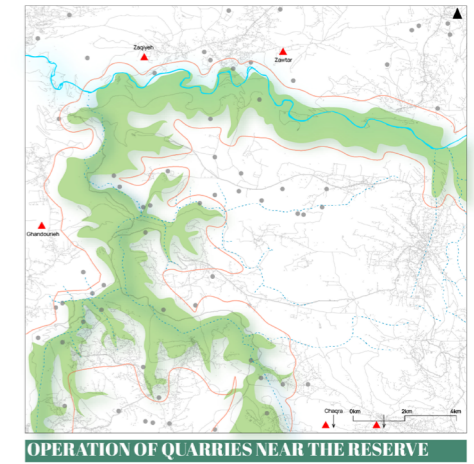
- Litani River
- Main Conveyer
- Secondary Conveyer
- Irrigation Perimeters
- Water Treatment Plant
- Permanent Karst Source PK2
- Permanent Karst Source PK3
- Temporary Karst Source TK2-ND
- Natural Water Spring
- Public Well Lebanon: 201
- Public Well South Lebanon: 201
- Private Well Lebanon: 20,230
- Private Well South Lebanon: 2,454
- With exploitation permit: 1,830



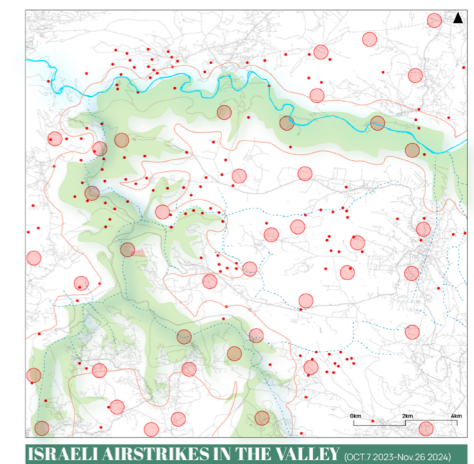
- Very high risk
- High risk
- Moderate risk
- Fire occurrence location

To support firefighting operations, **3 water tanks** were installed in the reserve

Sources: NATIONAL WATER SECTOR STRATEGY UPDATE - 2023, Ministry of Energy & Water Assessment of Groundwater Resources, Ministry of Energy & Water (LENGP)



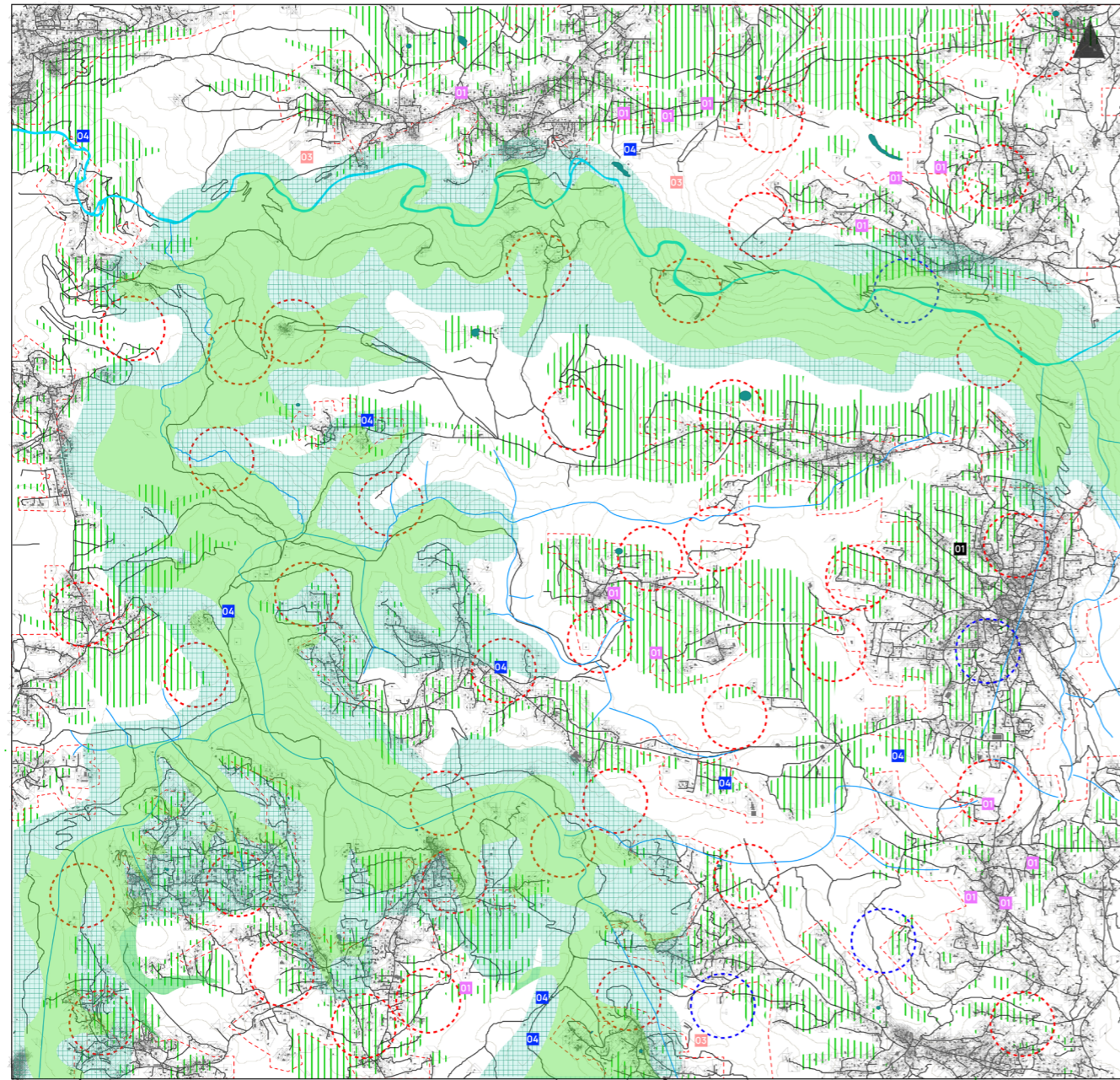
- Quarry



- Israeli airstrike (diameter=500m)
- Fire occurrence location

Sources: United Nations Development Programme (UNDP) - "Strengthening Nature Resilience Capacity - STN/Nature" project, funded by the Ministry of Foreign Affairs and International Cooperation of the Italian Republic through the Italian Agency for Development Cooperation (AICS), and implemented in coordination with the Ministry of Environment of Lebanon, 2020. Mapping location along Lebanon's Southern Border Since October 7 <https://www.iranianlab.com/en/2024/10/07/>

# CURRENT CONDITION OF THE VALLEY



0Km 1Km 2Km 3Km

- Legend**
- Core Zone
  - Buffer Zone
  - Litani River
  - River streams
  - Cultivated Area

**01**

**Industries**  
That pollutes the reserve's vicinity and major arteries of the Litani, threatening local ecology

**02**

**Bomb Crater**  
Israeli Attack contaminating a diameter of 500 m

**02**

**White Phosphorus**  
contaminated soil

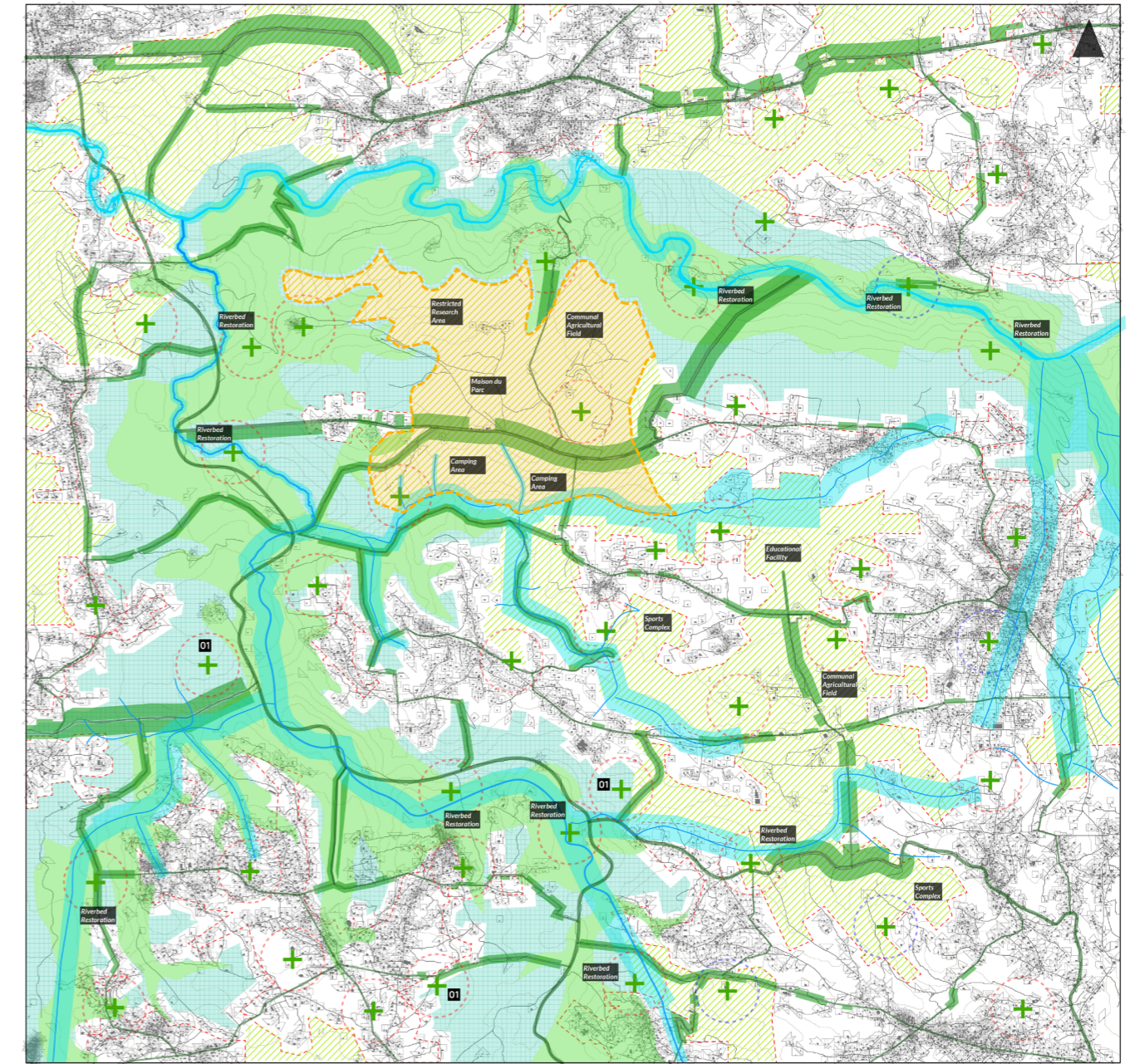
**03**

**Quarries**  
Operating near the reserve, extracting resources and lowering the underground water table

**04**

**Resorts with Pools**  
Operating near the reserve and lowering the underground water table

# AI HUJEIR VALLEY STRATEGIC INTERVENTIONS



0Km 1Km 2Km 3Km

- Legend**
- Core Zone
  - Buffer Zone
  - Transition Zone
  - Expansion Zone
  - Primary Green Eco-Corridor
  - Secondary Green Eco-Corridor
  - Primary Blue Eco-Corridor
  - Secondary Blue Eco-Corridor
  - Green Eco-Corridor Buffer
  - Blue Eco-Corridor Buffer

**Tree Planting**  
Tree nursery plantation zones for residents are created to encourage community stewardship

**Hiking**  
On elevated and mud-pressed trails installed amidst the valley's perennial oak and pine tree forests

**Camping**  
In the valley's exquisite secluded nature, mainly within specified area concentrated in the new buffer

**Bird Watching**  
From installed sightseeing platforms and bird-watching towers within the valley's forests

**Farming & Grazing**  
In communal gardens and farms established by the municipality to support local farmers

**Local Produce Market**  
To support local economies and encourage productive functional agriculture

**La Maison du Parc**  
A management unit that supports local inhabitants while promoting eco-friendly tourism in the area

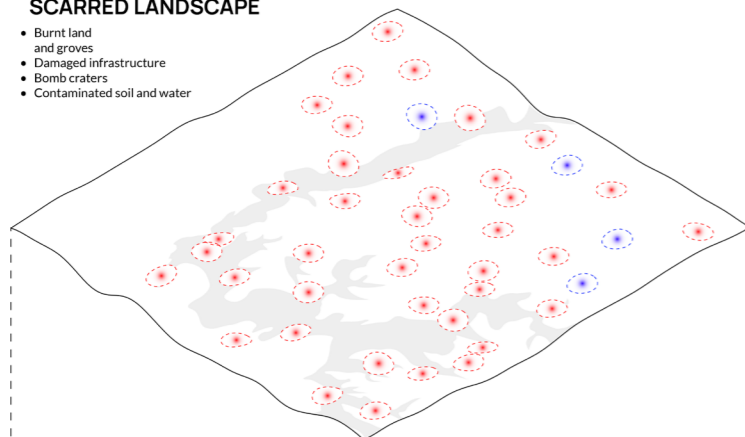
**Research Facility**  
To document the reserve's rich flora and fauna, and share ecosystem knowledge with the community

# THE VALLEY'S LAYERED TRANSFORMATION

## Existing condition

### SCARRED LANDSCAPE

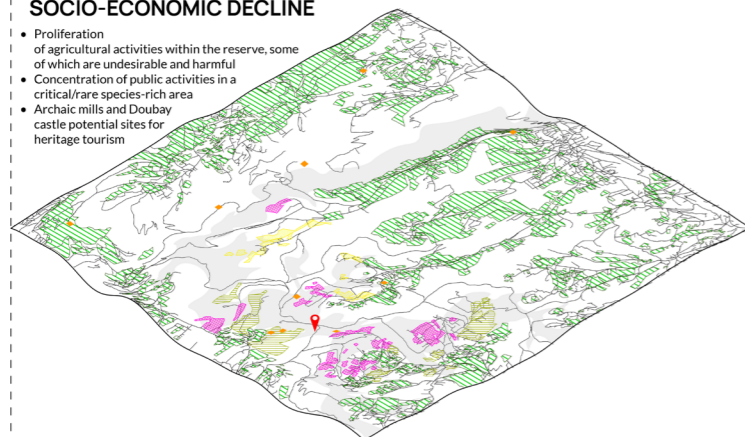
- Burnt land and groves
- Damaged infrastructure
- Bomb craters
- Contaminated soil and water



- Striked areas
- Phosphorus contaminated areas

### SOCIO-ECONOMIC DECLINE

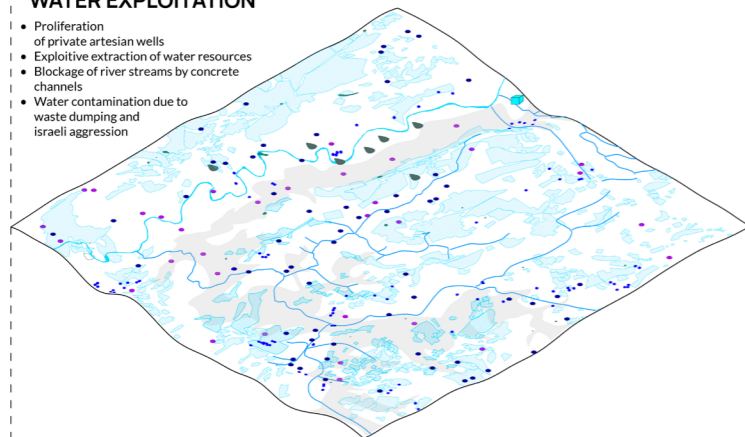
- Proliferation of agricultural activities within the reserve, some of which are undesirable and harmful
- Concentration of public activities in a critical/rare species-rich area
- Archaic mills and Doubay castle potential sites for heritage tourism



- Olive Trees and Carob agriculture Area
- Tobacco Agriculture
- Orchards
- Leafy greens

### WATER EXPLOITATION

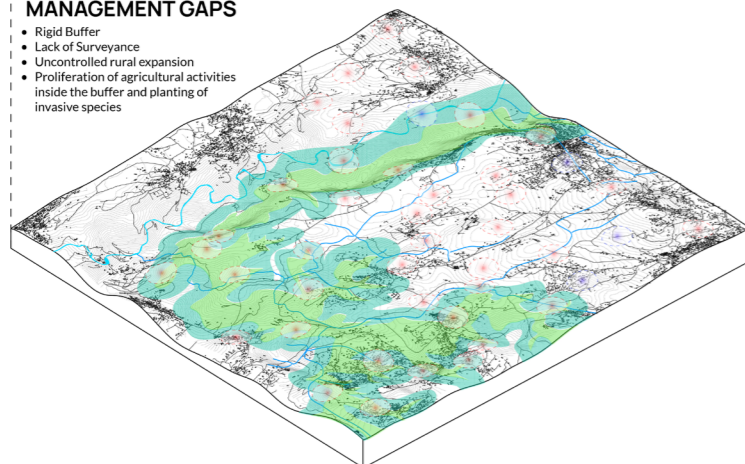
- Proliferation of private artesian wells
- Exploitive extraction of water resources
- Blockage of river streams by concrete channels
- Water contamination due to waste dumping and Israeli aggression



- Irrigation Domain
- Agricultural ponds
- Water Spring
- Public Well
- Aquifer Recharge Points
- WWTP (Primary Treatment)

### MANAGEMENT GAPS

- Rigid Buffer
- Lack of Surveillance
- Uncontrolled rural expansion
- Proliferation of agricultural activities inside the buffer and planting of invasive species

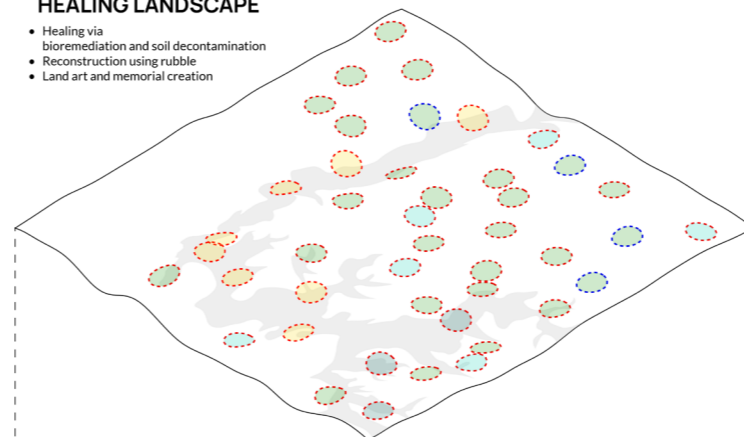


- Core Zone
- Buffer Zone

## Strategic intervention

### HEALING LANDSCAPE

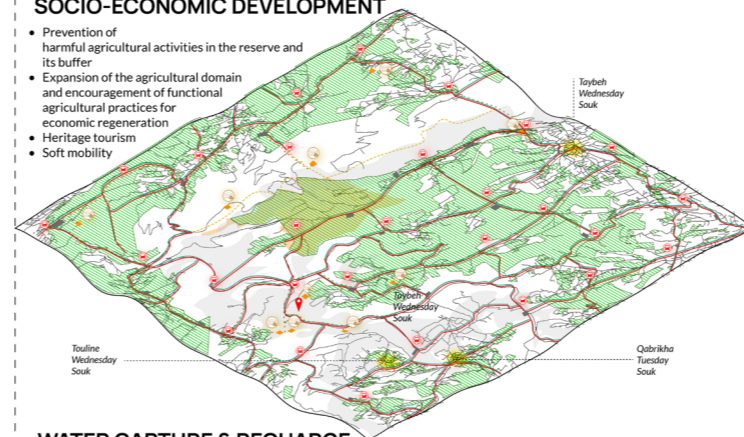
- Healing via bioremediation and soil decontamination
- Reconstruction using rubble
- Land art and memorial creation



- Bioremediation and Ecological Restoration Area
- Bioremediation and Geoglyph/Memorial Area
- Bioremediation and Reconstruction Area
- Bioremediation and Swapping for Reconstruction

### SOCIO-ECONOMIC DEVELOPMENT

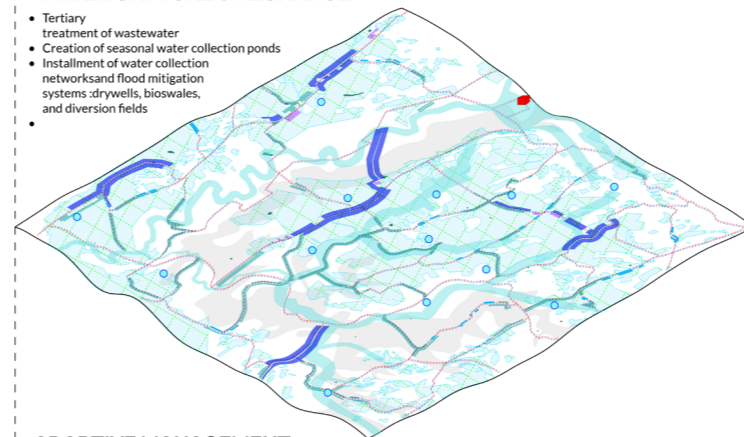
- Prevention of harmful agricultural activities in the reserve and its buffer
- Expansion of the agricultural domain and encouragement of functional agricultural practices for economic regeneration
- Heritage tourism
- Soft mobility



- Reserve Service Area
- Agricultural and Complementary Social Infrastructure Area
- Bus Stop
- Bus Line
- Biking Lane
- Elevated Pedestrian Trail
- Parking
- Heritage Tourism Site
- Heritage Trail
- Weekly Souk

### WATER CAPTURE & RECHARGE

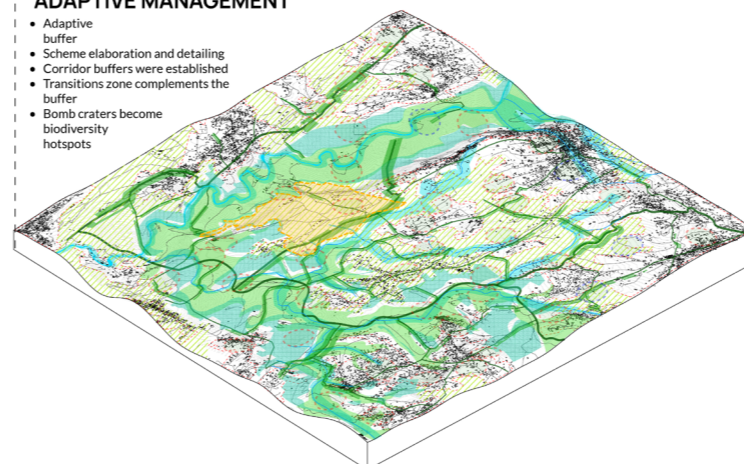
- Tertiary treatment of wastewater
- Creation of seasonal water collection ponds
- Installation of water collection networks and flood mitigation systems: drywells, bioswales, and diversion fields



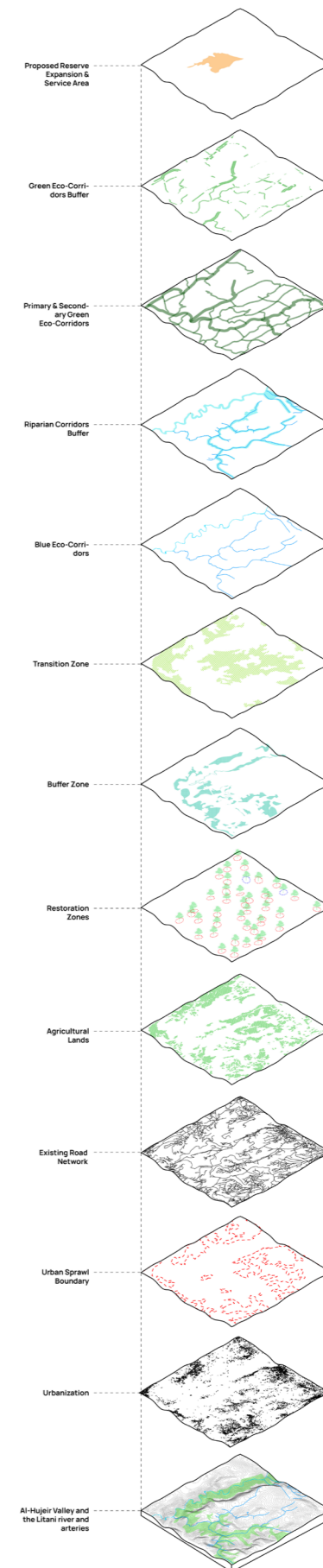
- Irrigation Domain
- Complementary ponds
- Irrigation network
- WWTP (Tertiary Treatment)
- Wastewater treatment pipes
- Clean water provision pipes

### ADAPTIVE MANAGEMENT

- Adaptive buffer
- Scheme elaboration and detailing
- Corridor buffers were established
- Transitions zone complements the buffer
- Bomb craters become biodiversity hotspots

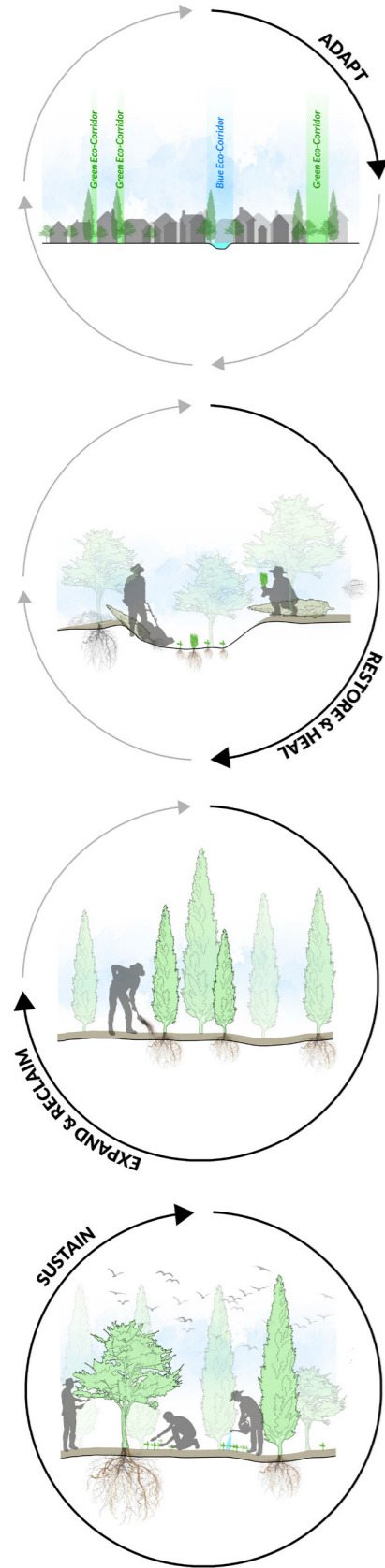


- Core Zone
- Buffer Zone
- Transitional Zone
- Sprawl Area



# THE FUTURE OF THE VALLEY

Strategic actions



Illustrated isometric vision of the valley



# STRATEGIC INTERVENTION: HEALING THE WAR-AFFECTED LANDSCAPE



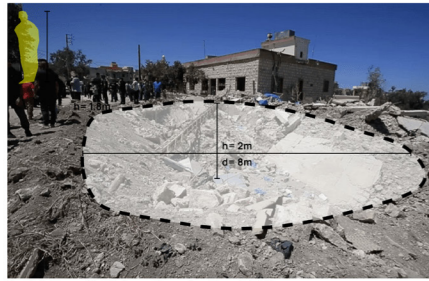
A crater in Nsariyyeh, South Lebanon. Source: Aawsat, 2025



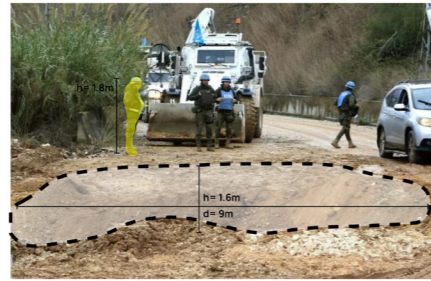
A crater in Nabatiyeh, South Lebanon. Source: Reuters, 2024



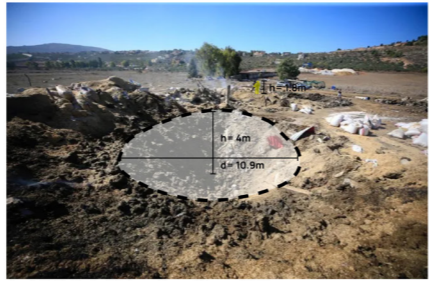
A crater in Abbasiyeh, South Lebanon. Source: Ali Hantik, 2025



A crater in Yaroun, South Lebanon. Source: Legal Agenda, 2024



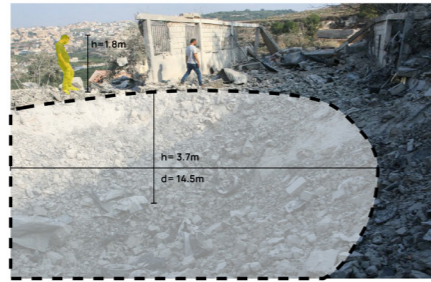
A crater in el Khardail, South Lebanon. Source: France24, 2025



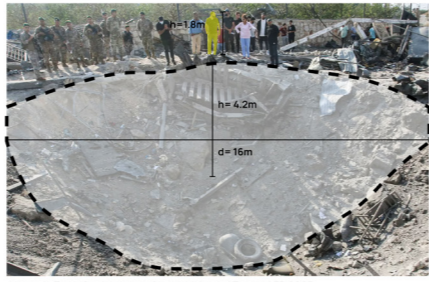
A crater in Mankila, South Lebanon. Source: Al Jazeera, 2023



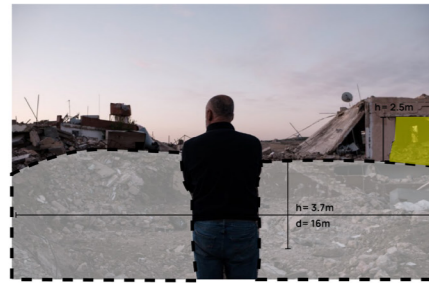
A crater in Nabatiyeh, South Lebanon. Source: Skynews Arabia, 2025



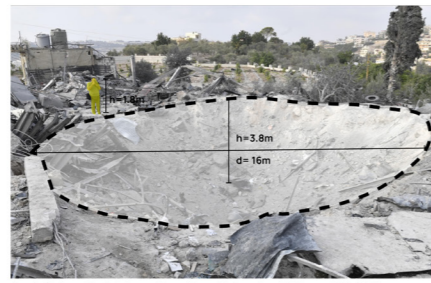
A crater in Touza, South Lebanon. Source: Mahmoud Zayat, AFP, 2025



A crater in Touza, South Lebanon. Source: Mahmoud Zayat, AFP, 2025



A crater in Yaroun, South Lebanon. Source: Sandro Basili, 2025



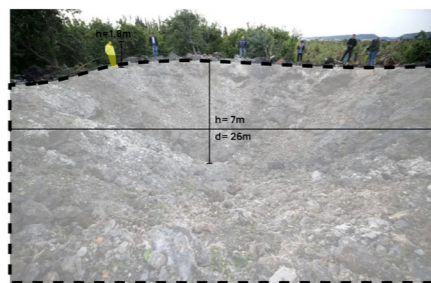
A crater in Froun, South Lebanon. Source: Omar Alotmani and Mohammad Sio, 2025



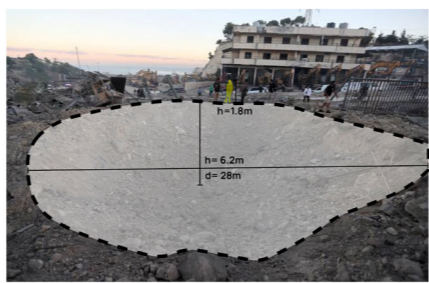
A crater in Alma al Chaab, South Lebanon. Source: AFP, 2024



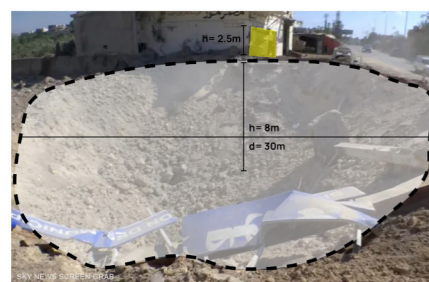
A crater in Wadi al Hujer, South Lebanon. Source: Lebanese Army, 2024



A crater in Tyre, South Lebanon. Source: Alghararnis, 2025



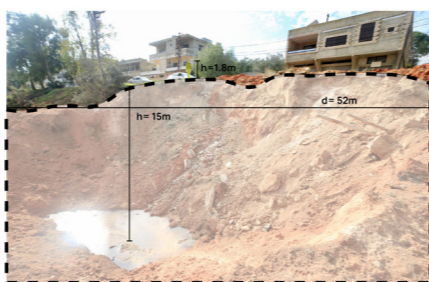
A crater in Msayleh, South Lebanon. Source: AP, 2025



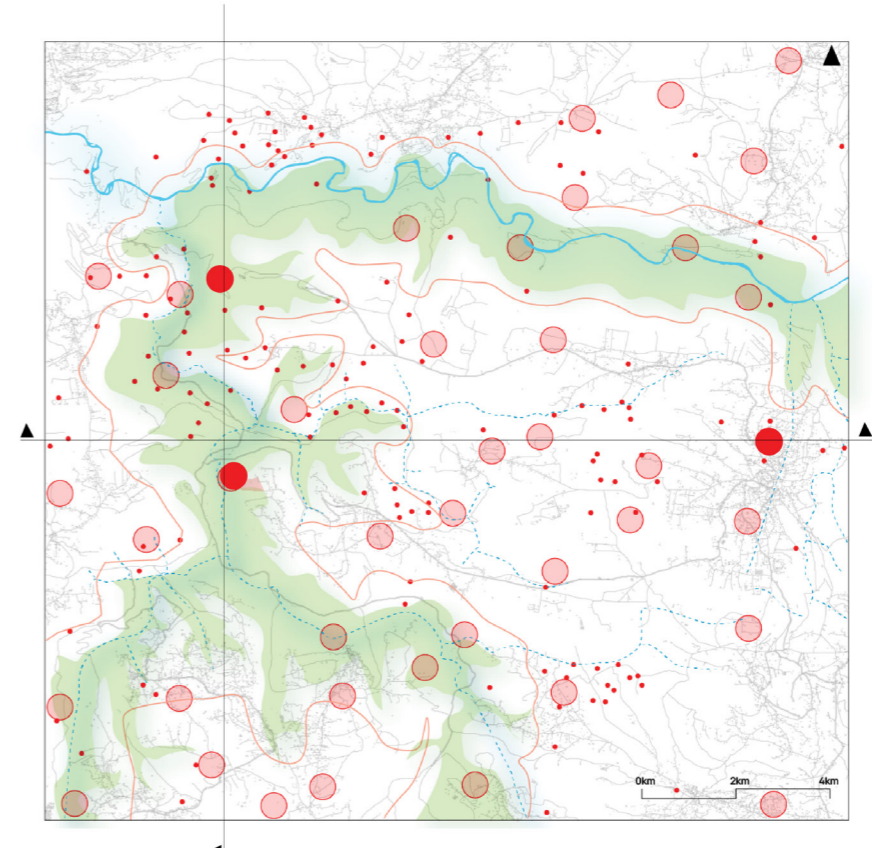
A crater on the entrance of Tyre, South Lebanon. Source: AFP, 2024



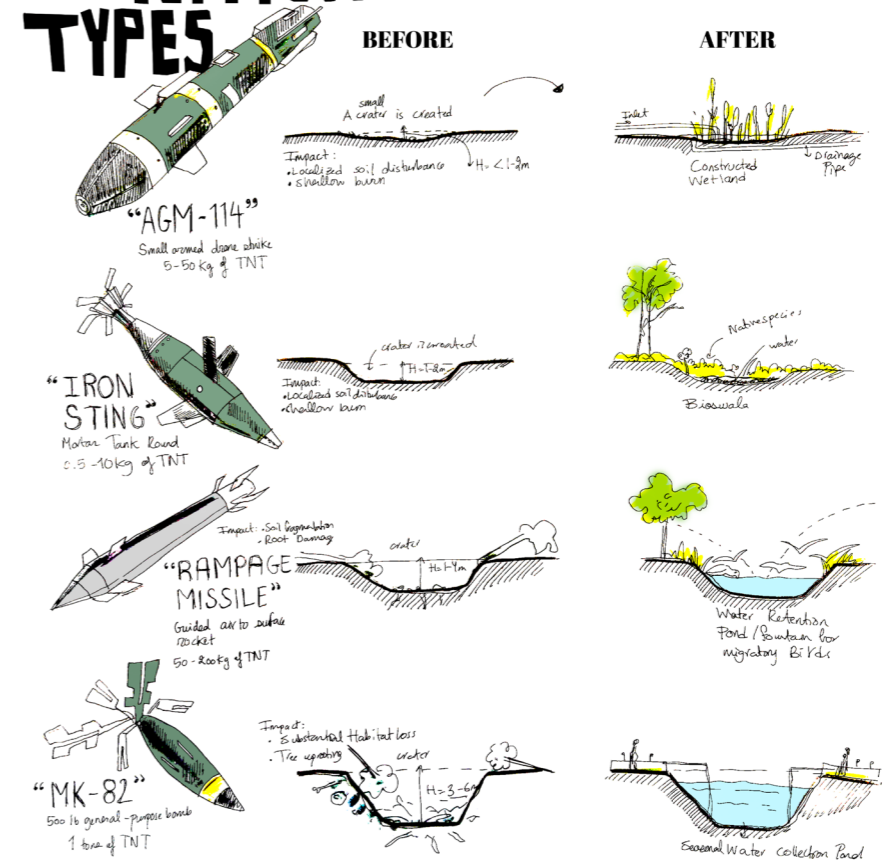
A crater in Tyre, South Lebanon. Source: Hussein Chaaban, 2024



A crater in Kfarika, South Lebanon. Source: Aawsat, 2024



## MUNITION TYPES



# FROM BOMB CRATERS TO BIODIVERSITY HOTSPOTS

Land Art Intervention



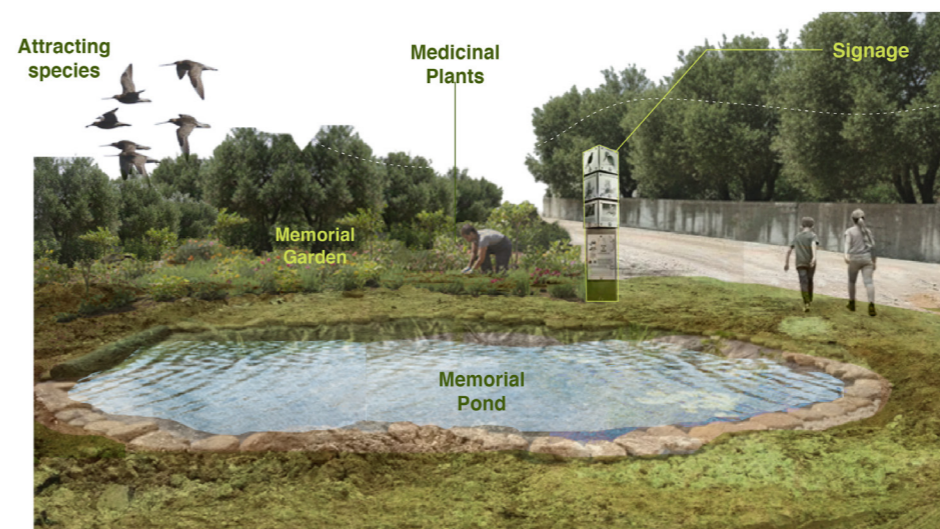
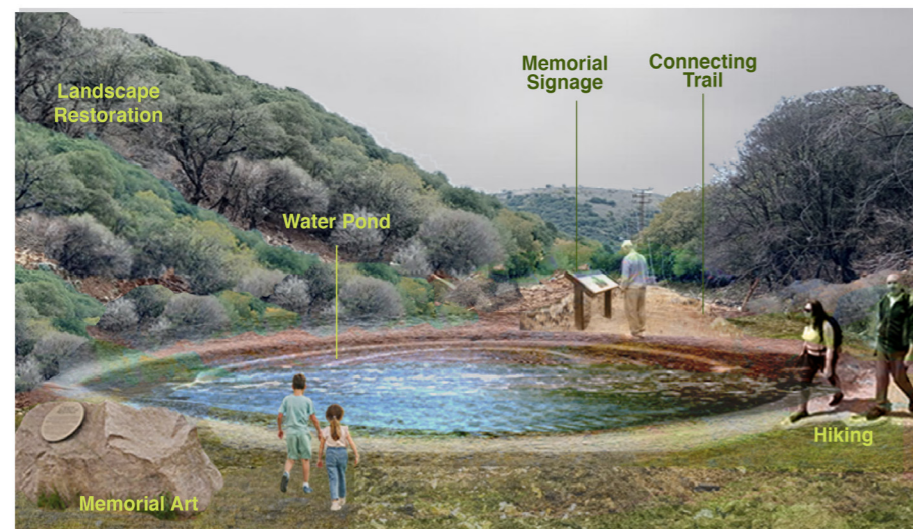
Bomb-Crater Pond in the village



- **Phase 1:**  
Assessment & Safety  
Get the all-clear from bomb disposal experts.
- **Phase 2:**  
Secure the land.  
Get permission, ownership, or a stewardship agreement in place.



- **Phase 3:**  
Ecological Rehabilitation
- **Phase 4:**  
Social & Memorial Integration



- **Phase 5:**  
Connect patches (trail through the villages)