**Project Title:  
Haifa Bay – Green High-Tech Hub: An Adaptive Model for Green Transformation. From Reclamation to Circular Economy and a New Quality of Life**

**Project Description**

The "Haifa Bay – Green High-Tech Hub" initiative aims to design and pilot an integrated model for the transformation of post-industrial territories, using Haifa Bay as a case study. We are on the brink of a major urban shift: the decommissioning of the local oil refinery site. This process brings not only opportunities, but also profound environmental and socio-economic challenges, which cannot be resolved using conventional top-down urban planning methods.

Our goal is to ecological adaptation and social integration of the existing territorial transformation plan into a green high-tech hub, where progress is driven not only by IT technologies but also by the principles of participatory design, sharing economy, and circular economy.

Our project proposes the creation of an open platform for co-designing and testing the Haifa Bay renewal plan, involving from the outset all key stakeholders — local residents, urban planners, environmentalists, IT entrepreneurs, circular economy experts, municipal authorities, and government bodies. "Haifa Bay – Green High-Tech Hub" lays the foundation for a cultural reboot, turning industrial legacy into a springboard for a green, inclusive, and technologically advanced city. This model has the potential to serve as the basis for an international center for sustainable urbanism.

**Problems Addressed by the Project**

The project targets five interrelated challenges characteristic of the post-industrial transition in Haifa Bay:

1. Environmental Crisis and Health Risks  
   The territory of the former oil refinery poses long-term risks: soil contamination, pollution of groundwater and air. Without independent expert review and public oversight, there is a threat of merely superficial environmental “rehabilitation,” which jeopardizes the health of future residents.
2. Socio-Economic Gap and Rising Inequality  
   The shutdown of industrial enterprises leads to the loss of jobs for thousands of skilled workers. Standard redevelopment projects focus heavily on the IT sector, overlooking the needs and skillsets of the local population, which further deepens social polarization.
3. Infrastructure and Urban Planning Imbalance  
   The area’s industrial logic is entirely unsuited for residential development and livable urban life. Top-down infrastructure planning risks creating an inefficient and inconvenient environment, ignoring people’s actual needs. There is also a dangerous tendency to build according to outdated models, even if they are recent.
4. Loss of Material and Cultural Capital  
   Industrial structures are not only sources of pollution but also carriers of the city’s cultural memory. Under standard “clear-and-build” redevelopment, these meanings and reusable materials often become waste, breaking generational continuity.
5. Lack of a Coordinated Transition Model  
   Currently, there is no centralized platform uniting all stakeholders — from environmentalists and residents to IT companies. This results in fragmentation, duplication of efforts, and a strategic vacuum where declared “green” approaches remain largely rhetorical.

Although some risk assessments were conducted by the Ministry of Environmental Protection in 2019 and limited public consultations were held, Haifa Bay still lacks a comprehensive strategic environmental review of the future status of the refinery ("BAZAN") and adjacent industrial zones — as well as alternative scenarios for the area’s transformation.

**Main Objectives of the Project**

The primary goal of this grant proposal is to carry out a multi-level adaptation of the existing Haifa Bay redevelopment plan to align with advanced environmental and social standards — namely, the principles of sustainable development.

**Project Objectives:**

1. To create a model for a comprehensive environmental assessment system with embedded public participation  
   This systeдуm will guide future decision-making for the Haifa Bay Renewal Program. It will serve simultaneously as a scientific foundation, a tool for public education, and a mechanism to mobilize residents for further practical actions — such as the dismantling of polluting facilities and the creation of a green, tech-based sustainable economy.
2. To develop and test an open co-design platform  
   This platform will ensure genuine involvement of residents, experts, and authorities at all stages — both online and offline — enabling inclusive and transparent urban transformation processes.
3. To propose attractive infrastructure solutions for advanced high-tech enterprises and startups  
   The goal is to foster environmentally friendly living and working environments and integrate these businesses into local eco-solutions (e.g., energy reuse from data servers).
4. To design an inclusive employment ecosystem  
   This will include job requalification and new employment opportunities in the green economy for vulnerable groups — such as former refinery workers, elderly people, individuals with disabilities, and caregivers.
5. To co-develop urban-level circular economy business models via crowdsourcing  
   This includes innovative architecture, urban planning, and the establishment of industrial eco-parks. The project will integrate waste management into a productive and socially beneficial system.
6. To institutionalize the proposed solutions  
   The aim is to develop a replicable pilot model that can be scaled to other post-industrial areas in Israel and beyond.

**Description of the Proposed Solution and Its Uniqueness**

The "Haifa Bay – Green High-Tech Hub" project offers a systemic solution based on the creation of an open, adaptive, and replicable platform that brings together all participants involved in the transformation process. Unlike conventional redevelopment programs, we propose the creation of a “social infrastructure of transition” — a living, interdisciplinary, and participatory framework.

**Key Components of Our Solution**

1. Hypothetical Master Plan: The Concept of a “Porous City”

As a counterbalance to monolithic development, we propose the design of a hypothetical master plan based on the principles of *porosity* and *multi-functionality*. This plan is not intended as a directive, but rather as a basis for discussion with experts and residents.

* Functional Zoning:  
  Instead of rigid separation into “residential” and “work” areas, we propose a “layered cake” model:
  + Ground floors: Public functions, small businesses, workshops, coworking spaces, sharing points.
  + Middle floors: Flexible living spaces (convertible apartments, co-living units).
  + Upper floors and rooftops: Urban farms, community gardens, recreational areas.
* Density and Building Height:  
  Variable building density to create a dynamic urban silhouette and avoid a “wall effect.” Taller buildings (up to 10–12 floors) are concentrated near transportation hubs, with density decreasing toward green zones.
* Green Corridors:  
  A continuous network of green corridors connecting the new district with Mount Carmel and the coastline. These corridors serve recreational, ecological (biodiversity, ventilation), and transportation (bike and pedestrian routes) functions.
* Transport Accessibility:  
  Priority is given to public transport, bicycle, and pedestrian infrastructure. Private vehicle access within neighborhoods is restricted; peripheral parking hubs with electric shuttle service are proposed.

**2. Innovative Urban Architecture: From Buildings to Ecosystems**

We propose initiating an open discussion with experts (architecture firms, engineers, sustainability professionals) and residents (through workshops and VR models) regarding the implementation of innovative urban architecture.

**Forms of Innovative Architecture:**

* **Bioclimatic Buildings**:  
  Structures designed with sensitivity to local climate conditions (wind patterns, solar exposure) to minimize energy consumption. Use of “green” facades and roofs for natural cooling and rainwater collection.  
  *(Note: “Green” is retained in quotation marks to reflect the original usage, suggesting both literal and conceptual meaning.)*
* **Modular Structures Made of Recycled Materials**:  
  Active use of construction waste from dismantled buildings and other recycled materials (e.g., plastics) to create new structures. Modularity allows for easy adaptation and reconfiguration of spaces to meet the needs of residents and businesses.
* **Integrated Vertical Farms**:  
  The inclusion of agricultural technologies directly within building structures for local food production, reducing logistics costs and the carbon footprint.

**Climate-Specific Forms of Urban Architecture (Haifa ↔ Krayot)**

| **Type** | **Adaptation to Mediterranean Climate** | **Socio-Economic Impact** |
| --- | --- | --- |
| **Shaded Courtyard Blocks** | 4–6-story timber-frame buildings with citrus-filled courtyards, passive ventilation, PV canopies | Affordable housing; 30% reduction in summer energy use |
| **Wadi–Sea Green Spine** | A green linear park along the Wadi Haifa stream, drought-tolerant vegetation, drip irrigation using greywater | Cooling urban heat island by 2°C; increase in property values |
| **Co-Housing + Maker Yards** | Modules with shared “tech yards” (3D printing, carpentry, upcycling), tented roofs for rainwater harvesting | 15% savings on utilities; boost to local entrepreneurship |
| **Rooftop Agrivoltaics** | Solar panels + hydroponics; heat from panels redirected to greenhouses; suitable for flat roofs of Technion and warehouses | Up to 5% of fresh greens for schools/cafés; educational platforms for agri-tech startups |

**How We Facilitate Discussion**

1. **Climate charrettes** with the architecture faculties of the Technion and the University of Haifa.
2. **VR tour + hands-on workshop** “Cool Courtyard DIY” in a Krayot schoolyard.
3. **Voting through the “Neighborhood Action App.”**

**Socio-Economic Impacts**

* **Economic**: Reduced utility costs for residents due to energy efficiency; new jobs in “green” construction, building maintenance, and urban farming sectors; increased property values driven by high quality of life.
* **Social**: Improved public health due to cleaner air and abundant greenery; stronger community bonds through shared spaces (gardens, public zones); enhanced environmental education.
* **Risks**: The risk of **“green gentrification”** — rising housing costs that displace less affluent residents. This must be mitigated through affordable housing and social rental programs embedded into the model from the outset.

**3. Industrial Eco-Parks: Closing the Resource Loop**

Instead of traditional industrial zones, we propose creating **industrial eco-parks** — symbiotic systems of enterprises where the waste of one serves as the input for another. This concept will be developed during expert sessions with industrialists and environmental professionals and openly discussed with residents to alleviate concerns and highlight benefits.

**Discussion Model with Experts and Residents:**

* **Experts** (industrialists, engineers, economists):  
  Closed workshops to map regional waste and resource flows, identify potential business models, and define technological solutions.
* **Residents**:  
  Public hearings with visual tools (3D models, videos), showcasing successful global examples, and discussing both economic (job creation) and environmental (waste reduction) benefits. Open conversations on safety and aesthetics of such facilities are essential.
* **Outcome of Discussions**:  
  Increased trust, local support for the project, adaptation of technical solutions to social expectations, and the creation of a pool of potential local workers and business partners.

**Two Models of Industrial Eco-Parks (Integrable into Haifa Bay’s Economy)**

| **Model** | **Local Flows** | **Residents** | **Outcome** |
| --- | --- | --- | --- |
| **Circular BioHub@Kiryat Hatalbot** | Brewery → CO₂ → spirulina; food waste from port market → biogas → steam for brewery | Microbrewery, algae startup, Technion food-tech incubator | –25% emissions, +20 green jobs |
| **BlueTech Park@Haifa Port** | Desalination plant → brine → minerals (Mg, K); excess heat from port data center → greenhouses | Haifa data cluster, aquafarm, chemical startup | Export of mineral fertilizers, closed-loop water system |

**Discussion Process**

* **Expert seminar**: “Ecopark Israel” (Technion Innovation Institute + port companies).
* **Bus tour**: “Inside the Industrial Zone” for residents (Haifa Bay eco-bus, one Saturday/month).
* **Crowd-mapping**: Residents mark odors/noise/ideas; data submitted to the working group.

**Key Actions**

1. **Comprehensive Territorial Analysis (Preparatory Stage)**:  
   Conduct independent environmental assessments, risk mapping, and analysis of the district’s social fabric and urban planning constraints.
2. **Formation of an Expert and Civic Platform**:  
   Establish a permanent collaborative structure that includes ecologists, urban planners, government representatives, and local residents.
3. **Development of an Open Digital Knowledge Base**:  
   Create interactive maps, data visualizations, idea collection tools from residents, and simulations of future neighborhoods.
4. **Organization of a Series of Workshops and Public Sessions** on key topics:  
   land reclamation, circular economy, innovative architecture, industrial eco-parks, and co-design of the urban environment.
5. **Design of a Pilot Neighborhood**:  
   Detailed planning of a single microdistrict to test architectural, logistical, and social solutions.
6. **Launch of the Urban “Sandbox”**:  
   A space for micro-experiments with resident participation — testing new formats for exchange, logistics, and material reuse.
7. **Development of Inclusive Employment Models**:  
   Design and test re-skilling programs for former industrial workers in areas such as urban agriculture, eco-construction, repair, and facilitation.
8. **Creation of a Local Resource Database and Role Coordination**:  
   Map local businesses, NGOs, craftsmen, and volunteers with clear task distribution and responsibilities.
9. **Development of a Scaling Strategy**:  
   Prepare methodological materials for adapting the model in other parts of Haifa and the region.

**Target Audience and Project Beneficiaries**

**Primary Target Groups:**

* **Residents of Adjacent Neighborhoods**:  
  Especially vulnerable groups — the elderly, families with children, new immigrants — who will gain a safe environment, accessible services, and opportunities for engagement and supplementary income.
* **Former Industrial Workers**:  
  A key group for requalification into new "green" professions (logistics, repair, eco-construction, mentorship).
* **Future Residents and Employees of the New District**:  
  The project helps them integrate into a vibrant, socially connected neighborhood instead of a “sterile campus.”
* **Local Small Businesses**:  
  Gain the opportunity to become project partners, exchange points, craft hubs, and creators of new jobs.

**Involved Stakeholders (Co-Creators and Implementers):**

* **Strategic Core (Project Team)**:  
  Responsible for overall coordination, fundraising, methodology, and communication with the municipality.
* **Expert Council (External Specialists)**:  
  Urban planners, ecologists, architects, economists, legal experts. They assist in concept development (master plan, eco-parks), conduct assessments, and provide consultation.
* **Working Groups (Thematic Teams)**:  
  Mixed teams of activists, experts, and business representatives tasked with implementing specific areas (e.g., “Circular Logistics Working Group”).
* **Local Coordinators (Active Residents)**:  
  Community opinion leaders and activists who serve as “bridges” to local populations, organize on-site events, and collect feedback.
* **Implementers (Students, Volunteers, NGOs)**:  
  Assist in organizing events, data collection, and implementation of pilot initiatives.

**Indirect Beneficiaries:**

* **Haifa Municipality**:  
  Gains a validated model for sustainable territorial regeneration and reduced social tension.
* **Investors and Developers**:  
  Gain access to a socially and environmentally verified foundation for decision-making, reducing financial and reputational risks.
* **Academic Community**:  
  Gains a unique platform for applied research and pilot experimentation.

**Integrated Roadmap – “Green High-Tech Haifa Bay”**

*(18-month horizon; aligned with key actions, objectives and engagement tools you translated earlier)*

| **Phase & Timing** | **Main Activities** | **Key Outputs (Tangible)** | **Expected Outcomes (Mid-term)** |
| --- | --- | --- | --- |
| **0. Kick-off (Months 1-2)** | • Recruit core team & Expert Council• Independent environmental & social baseline study; risk/resource mapping• Launch civic platform & public info portal | • Baseline report + interactive risk & asset map• Stakeholder database & engagement calendar | • Shared fact-base for all actors• Early trust through transparency |
| **1. Co-Design Sprint (Months 3-6)** | • Climate charrettes with Technion & U-Haifa faculties• VR “Porous-City” tours + schoolyard cool-courtyard workshop in Krayot• Three thematic labs: Master Plan, Innovative Architecture, Industrial Eco-Parks | • 3 illustrated concept packages• MVP of multilingual digital platform (“Neighborhood Action App”) with live polling | • Residents shape vision; >1,000 ideas logged• Consensus around porous-city zoning & two eco-park models |
| **2. Pilot District Planning (Months 7-10)** | • Detailed design of one test micro-district (layouts, mobility, green corridors)• Circular-logistics scheme & inclusive job profiles co-created with former refinery workers | • 1:500 master-plan set + BIM model• Training syllabus for reskilling (urban farming, eco-construction, repair facilitation) | • Permit-ready pilot block• 50 workers enrolled in green-skills track |
| **3. Urban “Sandbox” Deployment (Months 11-14)** | • Set up on-site test yard: sharing hub, maker-yard, rooftop agrivoltaic demo• Micro-experiments on reverse-logistics, material reuse, community events | • Physical demonstrator hub operating 6 days/week• Data dashboard on energy, waste, user traffic | • Proof-of-concept for circular services• >20 % reduction in pilot block residual waste |
| **4. Governance & Scale-Up (Months 15-18)** | • Draft municipal integration package (policy tweaks, land-use incentives, social rental safeguards)• Investor roundtables + impact-fund pitch• “Ecopark Israel” seminar & monthly eco-bus tours institutionalised | • Policy white-paper + draft ordinances• Signed MoU with municipality & port authority• Funding pipeline for Phase II construction | • Green gentrification risks mitigated via affordable-housing clause• Resources secured for full build-out |

**Results Framework**

| **Level** | **Indicators** |
| --- | --- |
| **Outputs** | Interactive risk map online; 3 concept packs; digital engagement platform (>3,000 users); pilot circular-logistics route; operational demo hub |
| **Outcomes** | 30 % energy-use drop in demo hub; 200 green jobs path-wayed; civic participation index +40 %; municipal adoption of porous-city zoning |
| **Impacts**  **(5 y.)** | Former refinery zone certified safe & re-integrated; Haifa Bay recognised as Israeli flagship for just green transition; replicable toolkit published under Creative Commons |

**Risk & Mitigation Snapshot**

| **Risk** | **Response** |
| --- | --- |
| Developer push-back for quick profit | Public-private “value-capture” model proving long-term ROI; alliance with academic & civil-society voices |
| Green gentrification | 25 % units reserved for social rental; community land-trust exploration |
| Skill-gap of legacy workforce | Modular up-/re-skilling with early paid apprenticeships; mentorship by Technion students |

**Post-Project Sustainability**

1. **Function Handover** – coordination & communications gradually shift to trained local coordinators.
2. **Municipal Integration** – circular logistics, repair hubs and eco-parks written into city budget lines.
3. **Revenue Streams** – paid eco-park tours, maker-yard memberships, recycle-as-a-service contracts.
4. **Open-Source Toolkit** – “Green-Bay in a Box” templates and code released for other Mediterranean ports.

This roadmap keeps every milestone traceable to the objectives, engagement methods, and inclusive employment pathways you defined, while stretching the timeline to 18 months to ensure concept maturation and pilot proof before city-wide roll-out.