

panarchy cycles 3p4o

introduction

The landscape of the Costa Blanca is defined by its geological, biological, and cultural richness, elements that have historically shaped both the ecological processes and social practices of the region. Here, the landscape is not merely a backdrop but an active medium: it embodies practices, and those practices, in turn, are inseparable from the landscape that enables and sustains them.

The project site, located between the coastal front and the inland reef formation of the Santa Pola ridge, is a paradigmatic expression of this condition. It is a place of unquestionable environmental and scenic value that has nonetheless been heavily anthropized. The area has long served as a resource frontier: first as a site for limestone extraction fueling Alicante's coastal urbanization, and later as an active shipyard supporting the nautical economy. These extractive logics, of stone and sea, have shaped a hybrid territory where natural systems and human interventions collide and overlap.

The site is structured by three distinct yet interrelated landscapes:

- The former Vatasá shipyard, which, after losing its concession for industrial use and under increasing pressure from coastal climate adaptation policies, is now poised for ecological and social regeneration.
- The abandoned limestone quarry, carved into the ancient coral reef of the Santa Pola atoll, a site that, after over a century of extraction, presents both significant topographic discontinuities and latent scenic potential.
- The urban strip that connects them, primarily composed of seasonal dwellings and residual open spaces, shaped by tourism dynamics and disconnected from the deeper territorial logics of the coast.

Each of these three fragments is marked by its own tensions, constraints, and histories. Yet, the real challenge lies not only in resolving their individual problems but in revealing or reimagining the relations that once existed or could emerge among them. The opportunity is not to simply “re-function” these landscapes, but rather to re-signify them, to derive new collective meanings from their functions, rooted in the site’s unique ecological, geological, and cultural conditions.

This is, above all, a problem of lost identity and disarticulated meaning. Regeneration here must not be reduced to restoration; it must become an adaptive reorganization, capable of catalyzing a new territorial identity grounded in memory, diversity, and systemic resilience.

dynamic interdependences

panarchy cycles 3p4o draws upon the ecological resilience theory of C.S. Holling, specifically his concept of panarchy, a framework that describes the dynamic interplay between systems operating at different scales, evolving through adaptive cycles of growth, collapse, release, and renewal. Applied to the landscape of Santa Pola, this concept becomes both a diagnostic and a projective tool: a way to read the site’s layered histories and latent energies, and to envision a regenerative path forward.

At its core, the proposal understands landscape as a producer of landscape. It identifies and activates the functions embedded within the site, tracing the dependencies among those functions, ecological, infrastructural, cultural, and the cyclical dynamics that emerge from their interactions. Rather than treating space as static and fragmented, the project embraces a systemic logic of interrelation between spaces, ecological processes, social practices, and even administrative procedures.

Historically, the Varadero–Cantera area derived its significance from its ability to generate momentum and transformation within the territory. Whether by producing ships to navigate the Mediterranean or extracting stone to build its shoreline, the site acted as a territorial engine, creating energy, identity, and matter. However, this productive capacity came at the cost of degrading the very environmental conditions that made it possible in the first place.

The project acknowledges this legacy and confronts its consequences: topographic ruptures, legal limitations, degraded ecologies. But rather than erasing these traces, it proposes to embrace them as the starting point for new cycles. By doing so, it aims to generate new layers of meaning, while simultaneously creating enhanced conditions for the landscape to regenerate itself, ecologically, socially, and spatially.

This is not a fixed plan or a single-phase intervention. It is a process-oriented vision, one that sees the project not as a definitive transformation but as the inception of a new attitude toward landscape, an attitude that is adaptive, incremental, and relational. The Varadero–Cantera area becomes a testbed for a broader model of co-evolution between nature and culture, a place where regeneration is not an end state but a continuous, living process.

three phase strategic plan

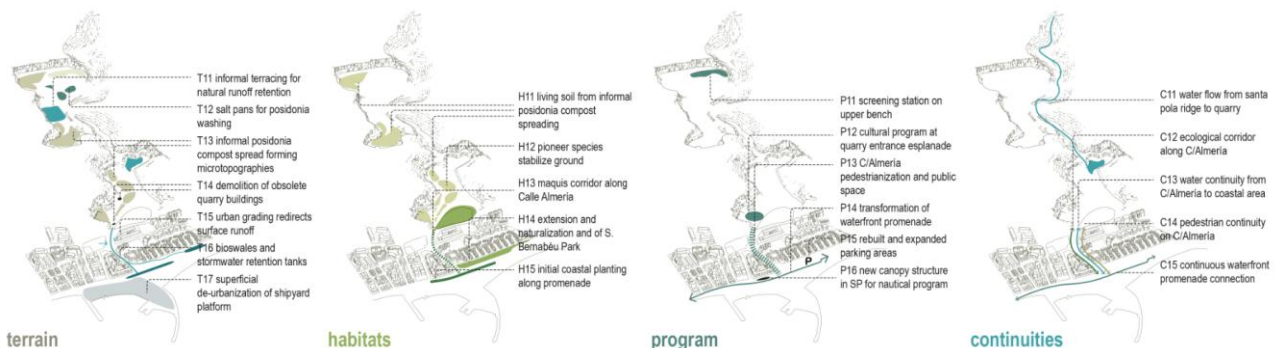
To guide the transformation of the Varadero–Cantera site in alignment with panarchical thinking and systemic regeneration, the proposal unfolds across three sequential phases, each corresponding to a distinct moment in the generation of cycles: TACTICS, INFRASTRUCTURE, ADAPTATION. Within each phase, four categories of operations are articulated as the primary tools of intervention:

- terrain operations, actions related to the physical and ecological ground, including topographic reconfiguration, soil restoration, hydrological correction, or shoreline adaptation.
- habitats operations, strategies addressing biodiversity, microclimates, and ecological succession through planting, habitat creation, and biotic infrastructure.
- program operations, the insertion or evolution of uses, functions, and activities, whether temporary or permanent, anchored in the site's socio-cultural and ecological logic.
- continuity operations: interventions aimed at establishing spatial, ecological, and relational connectivity, across fragmented urban fabrics, natural corridors, and flows of movement or energy.

Each phase acts as a layered activation of these four operations, with specific key actions identified within each category. These actions are both site-specific and scalable, allowing for flexibility in implementation according to institutional timelines, ecological rhythms, and community engagement capacity.

Rather than proposing a rigid timeline, the phased approach allows for feedback loops and learning, enabling the project to evolve dynamically as new conditions, challenges, or opportunities emerge. The strategy is not merely a roadmap but a living framework, capable of guiding coherent transformation while remaining open to adaptation.

phase 1: TACTICAL



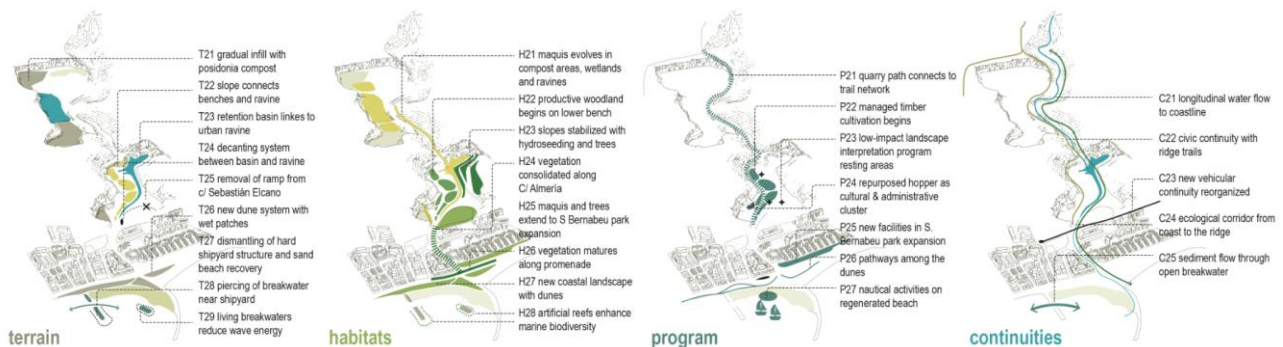
Phase 1 constitutes the initial moment of activation, a pre-operational stage that precedes formal planning approvals and regulatory procedures. Rather than waiting for the administrative green light, this phase embraces a strategy of temporal hacking: working with ecological timeframes and around bureaucratic inertia. It is a moment for testing, improvising, and leveraging loopholes in the system to initiate change.

This phase prioritizes low-impact, reversible, and adaptive actions that do not require deep environmental assessments or modifications to existing planning regulations. These are tactical interventions with high catalytic potential, initiating regenerative processes, conditioning the terrain, and laying the groundwork for future phases. Many of them adopt a logic of productive disturbance, using available organic matter and demolition waste, redirecting water flows, and initiating ecological succession with pioneer species.

The operations during this stage reveal a clear cross-scalar logic, combining landscape engineering (such as soft topographic reshaping and stormwater management) with early social programming (temporary cultural spaces), and infrastructural groundwork (stormwater tanks, bioswales, mobility reconfigurations). They also engage in a deliberate ambiguity, keeping options open and scenarios plural, in line with the open-ended nature of the landscape's potential futures.

This phase is, fundamentally, about setting conditions, not defining conclusions. It opens a space where time becomes a design material, and where processes are set in motion before they are fully formalized, an anticipatory approach that sees regeneration as a temporal negotiation, not a sequence of fixed steps.

phase 2: INFRASTRUCTURAL



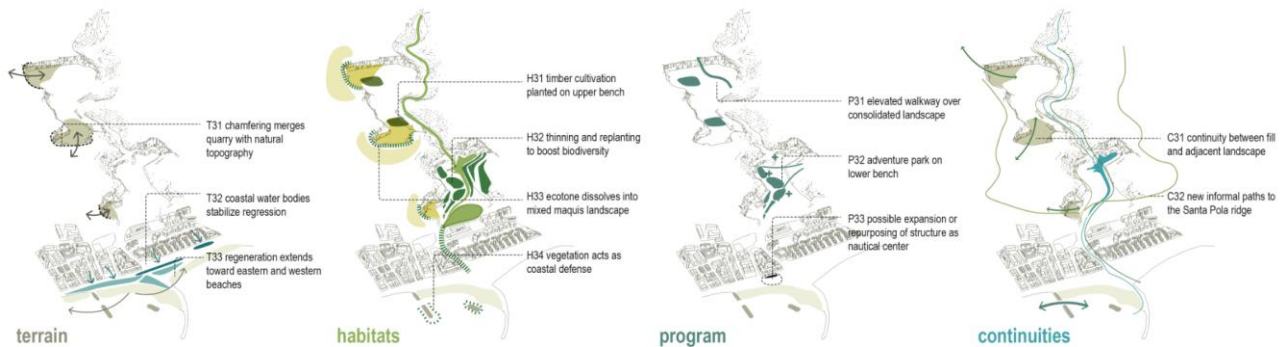
With the official approval of the urban planning documents, environmental assessments, and landscape integration studies, the project enters its second stage: the Infrastructural Phase. This moment signifies the transition from informal, tactical interventions to heavy infrastructural operations. The regulatory frameworks now provide the green light to engage with deeper, more durable modifications of the territory, allowing for interventions of greater physical, ecological, and civic scale. However, this new phase does not overwrite what has been initiated before, it builds directly upon it. The reprogramming and resignification triggered in the tactical phase, through soft occupation and adaptive reuse, now serves as a foundation upon which the infrastructural logics are embedded and extended.

In this phase, infrastructure is not conceived as a neutral technical layer, but as a powerful medium for reinterpretation and continuity. Landscape formation is guided by ecological processes, with the reconfiguration of topography and hydrology designed to restore water flows, sediment transport, and contact between people and natural systems. Coastal recovery integrates biotic and abiotic elements, including living breakwaters, artificial reefs, and dune landscapes that respond to both environmental dynamics and cultural memory. The quarry is no longer a scar, but a transformed system, stabilised, reconnected, and integrated into the wider ecological matrix.

Vegetation evolves from initial pioneer layers into more mature ecosystems. Species succession is guided but not imposed, allowing for spontaneity and complexity to emerge. Productive ecologies take root, from maquia expansion to timber cultivation, generating not just landscape character but also new material and economic possibilities. Cultural and recreational programs introduced in earlier stages begin to formalize and diversify, always with a light and respectful footprint that aligns with the evolving identity of the site. Structures are reimagined rather than replaced, and occupation of the land remains gradual, responsive to what the landscape itself can host.

Above all, this phase is about knitting together what was fragmented, establishing flows and continuities that transcend the project boundaries. Water moves from ridge to sea; species migrate between maquis, wetland, and coast; people traverse new paths linking city, quarry, and shoreline. Infrastructure, in this sense, is not a final form but a scaffold for ongoing life. This stage embodies a deep understanding of regeneration as an open process, never static, always evolving, where systems are reinforced, but meanings continue to unfold.

phase 3: ADAPTIVE



The Adaptive Phase marks the emergence of a new equilibrium, where the ecosystems previously initiated and guided have reached a state of sufficient maturity to support more permanent and intensive forms of occupation. This is the stage where landscape has regained enough resilience, ecological, morphological, and symbolic, to allow for more ambitious interventions that do not threaten its stability, but rather draw meaning and energy from its consolidated structure. In the quarry, the residual contrast between artificial reliefs and the original topography begins to dissolve; selective rock removal allows the landform to merge seamlessly into the adjacent mountain, completing a long cycle of reintegration.

On the coast, stabilized water bodies counter the effects of erosion and become active agents in coastal resilience, setting the conditions for replicable processes along other vulnerable beach fronts. Vegetation systems now perform both ecological and infrastructural roles, timber plantations are managed, diversified, and harvested, while mature shrubland and forest patches act as living buffers against marine intrusion. The ecotone between restored areas and the surrounding territory gradually fades into a complex, hybrid landscape, where nature and intervention are no longer easily distinguishable.

In this new landscape condition, the programs introduced evolve accordingly. What began as light and reversible actions now gives way to elevated walkways, adventure parks, and permanent cultural or educational facilities. Yet, these remain rooted in the regenerative logic of the site: materials such as cultivated timber are used to build the new structures, and spatial interventions are designed to hover above, rather than impose upon, the land. The coastal equipment envisioned in earlier phases now finds a more formal place, following the legal reclassification of maritime-terrestrial zones. Even the informal trails that emerge spontaneously as people reclaim their access to the mountain are recognized as valid expressions of continuity, both physical and cultural.

Rather than closing the project, this phase reaffirms its open-ended nature. It invites reinterpretation, allows shifts in use over time, and resists the notion of finality. If the earlier stages seeded transformation and resilience, this adaptive moment reaps their benefits, not as a conclusion, but as a renewed beginning.