DAHARI'S MARINE STRATEGY 2025-2030

Developing a network of fisher-led no-take zones to restore the reefs of the Comoro Islands

Dahari
Komori ya leo na meso

Dahari, which means 'sustainable' or 'forever' is a Comorian NGO created in 2013.

Our mission is to support rural communities to restore the ecosystems of the Comoros.

You can find out more about our forests, agroforests and marine programmes on our website www.daharicomores.org, and follow the latest news via our Facebook page.

Dahari

Front page photo: Fishers from the association Malezi Mema, who initiated the first fisher-led no-take zone in the Comoros, with a sign displaying its location, rules, and fines.

SUMMARY

The Comoro Islands in the Western Indian Ocean sit at the heart of the second richest marine biodiversity zone in the world and rank in the top ten countries most vulnerable to coral reef degradation. Conserving the country's reefs is critical to ensuring the food security of the 350,000 people who live in rural communities along the coastline.

Dahari will implement fisher-led no-take zones (NTZ) to restore reefs, networked in order to maximise benefits to both fisheries and biodiversity, and to promote learning and support between fisher groups managing NTZ. During an initial expansion phase in 2025 and 2026, we will support the creation of at least five NTZs in our core intervention area in the southwest of Anjouan, home to 20,000 people in ten communities and 425 hectares of reef – 10% of Anjouan's total reef area. From 2027, we will develop a collaborative plan to scale nationwide.

This strategy is based on ten years of learning from developing marine interventions in the Comoros, during which time Dahari has grown to become the largest NGO in the country. The strategy builds on the success of the first fisher-led NTZ for the Comoros facilitated by Dahari in 2021, and a thorough 18-month long planning process which has included input from communities and advisors from a range of national and international institutions (see page 15).

NTZs are a long-established marine conservation and fisheries management tool, affording the highest level of protection to coastal habitats and biodiversity, as called for by the global "30x30" campaign. Dahari's strategy is based on five key pillars that ensure this approach is context-adapted and scalable:

- **Co-design fisher-led no-take zones**, involving all fisher groups and integrating ecological and social criteria.
- **Co-design fisher-led governance** that avoids externally-imposed institutions, using a two-tier system where local authorities validate and support fisher decisions.
- **Incentivise compliance** with NTZs by offering direct benefits that are integrated into fisheries value chains to reinforce existing livelihoods.
- **Advocate for fisher rights** and legal and policy recognition for the model by building on a well-established collaboration with the National Fisheries Department.
- **Ensure data-driven learning** based on reef, fisheries, and socio-economic monitoring to feed adaptive management and build recognition of the model.

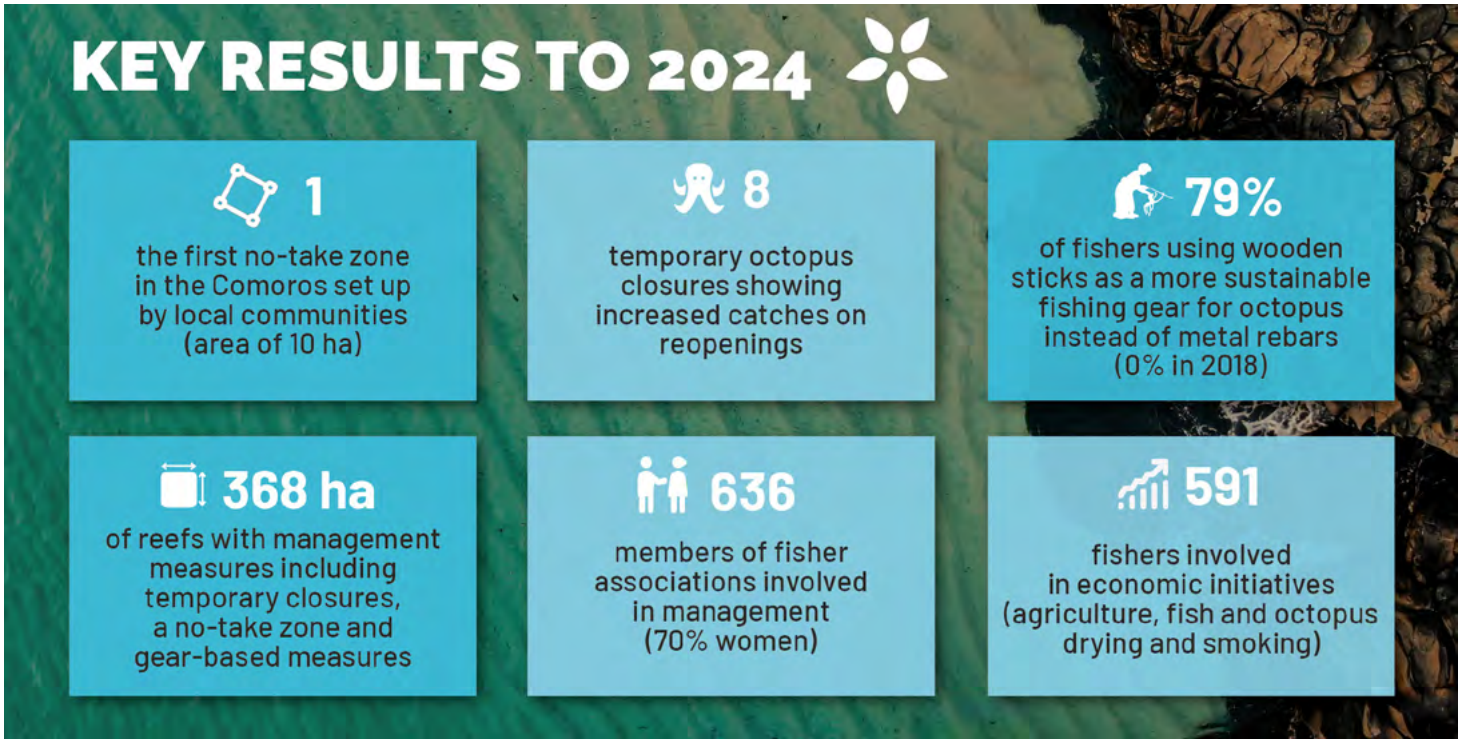
We are looking for support from funders who share our vision for the restoration of the reefs of the Comoros and can provide the flexibility which will allow us to learn and adapt as the programme evolves. Our funding need for 2026 is €400,000, with annual budget set to increase in line with expansion.

1. CONTEXT & BACKGROUND: THE NEED FOR A STRATEGIC REVIEW

The Comoro Islands, an isolated archipelago sitting at the heart of the second richest marine biodiversity zone in the world[1], rank in the top ten countries most vulnerable to coral reef degradation[2]. Overfishing and destructive fishing techniques put pressure on reefs, pressure that is exacerbated by frequent bleaching events linked to climate change. The root causes include inequalities in resource allocation, forcing poorer people into livelihoods based on unsustainable resource extraction, and weak social cohesion and governance institutions. These factors are amplified by 70% dependence on fish for protein in rural areas, widespread poverty (Comoros is ranked at 156 out of 189 countries on the Human Development Index) and a very high and growing population density (over 750 people/km^2 on Anjouan).

Subsistence fisheries in the Comoros are open-access, with no regulations governing access or exclusion rights. Those laws that exist lack appropriate and coherent application because of scarce resources. Efforts aimed at preserving marine resources have been limited to protected areas (the first created in Mohéli in 2001, followed by three further marine protected areas in 2018), and co-management agreements, implemented in a largely top-down manner. No successful formalised models for community-led management are in place.

Dahari has been trialling various community-led fisheries management tools since 2015 (see key results below). These have included introducing temporary octopus fishery closures led by local women's associations, behaviour-change campaigns around destructive practices including switching from metal bars to wooden sticks for octopus gleaning, and facilitating the implementation of the first community-led no-take zone (NTZ). This work has been supported by reinforcing governance mechanisms at the community level, in particular through supporting the creation of fisher associations. A complementary advocacy programme in collaboration with the National Fisheries Department (Direction Générale des Ressources Halieutiques - DGRH) is working towards greater legal and policy recognition of the tenure rights of small-scale fishers.



[1] Obura et al (2019). The Northern Mozambique Channel. World Seas: An Environmental Evaluation
[2] Burke et al (2011). Reefs at Risk Revisited. WRI

Despite these achievements, a number of underlying problems have limited progress towards developing a replicable community-led marine management model:

- **Social:** The large size of villages and a chronic lack of social cohesion in the Comoros (as compared to neighbouring countries) impedes effective collective action, and village associations are often weak and lacking in strong leaders. A few individuals are able to significantly disrupt collective action.
- **Institutional:** There is a lack of strong institutions to govern management measures and ensure enforcement of regulations. The fisheries laws that exist lack provisions for community-led management and are rarely applied.
- **Economic:** The unfavourable macroeconomic context with very high production costs in-country - in part due to the currency being pegged to the euro - a small local market and relatively cheap imports all mean that livelihood initiatives struggle to bring sufficient financial benefits to properly incentivize conservation.

From mid-2023 to end 2024 we therefore undertook a thorough programme review with the aim of identifying a strategy that can support fishers to achieve the sustainable management of marine and coastal resources in the Comoros, despite the complicated enabling conditions.

Fisherwomen catching octopus with wooden sticks, a more sustainable fishing gear compared to metal rebars.

2. OUR NEW STRATEGIC FOCUS: FISHER-LED NO-TAKE ZONES

Drawing on reflections around key successes to date, we concluded that NTZs were the most effective, feasible and contextually appropriate management tool to focus on for the future. There is robust evidence from around the world demonstrating the impact of NTZs on fish biomass and reef ecosystems[3], and the reaction to the first fisher-led NTZ in the Comoros that we facilitated has been very positive (see below).

The impact of the first fisher-led no-take zone in the Comoros

The NTZ was implemented in 2021 by Malezi Mema, an association of 58 fishers from the three villages of Vassy, Dzindri and Salamani on the southwest coast of Anjouan. Malezi Mema worked in collaboration with local authorities and other institutions, and now leads on management, including regular surveillance patrols funded by Dahari and supported by local authorities.

To designate the NTZ, key marine habitats were mapped based on fishers' local knowledge and results from rapid reef assessments. Combining scientific and local knowledge in an inclusive approach, fisher leaders proposed an area of ten hectares of reef rich in biodiversity and with good fishery productivity, and that was also socially acceptable i.e. it wouldn't impact too much any one group of fishers. Other meetings and informal consultations took place in the communities to validate the selected area. The NTZ was then formalized through a local bylaw recognized by regional authorities and signed by all relevant stakeholders.

Dahari provided a Fisheries Aggregating Device (FAD) to the fishers' association to improve productivity from pelagic fishing in order to offset fishers' potential losses from a reduced fishing area and increase overall acceptance of the initiative. The FAD was included in a collaboration agreement with the association to tie the incentive directly to the implementation of the NTZ.

The NTZ is perceived as the most effective marine management measure to date (75% of fishers are positive about the measure, based on perceptions surveys conducted in 2023), with fishers mentioning benefits such as the return of some fish species, and increased abundance of others. Three years after its implementation, preliminary analysis of fisheries catch data shows a significant increase in catches at sites located within 1km of the NTZ (report in preparation).

While community NTZs are generally smaller than Marine Protected Areas, at scale they can combine to have a similar positive impact on nearshore fisheries and coral reefs [4,5]. An effective network of NTZs includes a variety of habitat types, enhancing ecological connectivity and thereby helping to regenerate reefs, boost fishing productivity, and contribute to long-term resilience to climate change [3,5]. Developing a network of NTZs also has social benefits, allowing different fisher groups to learn from each other on all aspects of operating NTZs, in particular on governance mechanisms.

Future NTZs will be officialised through local bylaws, following the example of the first fisher-led NTZ. These bylaws fit within the existing national framework for fisheries management. We will work towards recognition and formalisation of the model at the national level through advocacy and collaboration with the DGRH.

---

3 Lester et al (2009). Biological effects within no-take marine reserves: a global synthesis. MEPS.
4 Gaines et al (2010). Designing marine reserve networks for both conservation and fisheries management. PNAS.
5 Goetze et al (2021). Increased connectivity & depth improve the effectiveness of marine reserves. Glob Change Biol.


Participatory mapping of key biodiversity areas with fishers to discuss NTZ placement (left); fishers demarcating the first NTZ area with buoys (right)

We will also work to identify a context-appropriate name for NTZs in *shikomori* (Comorian language): several advisors and studies have emphasised the importance of aligning communication with socially and culturally important norms and drivers[6].

This focus on NTZs represents two key changes from our previous approach:

- While temporary octopus fishery closures were originally conceived as catalysts to wider management measures (as demonstrated elsewhere in the Western Indian Ocean), the macroeconomic challenges in particular mean these have not delivered the anticipated outcomes in Anjouan. Without significant short-term benefits to fishers, and insufficient evidence of long-term benefits on reef health in the region[7], we concluded that such closures should no longer be our primary focus.

- We will no longer support the creation of *new* fisher associations, though we will continue to work with existing associations that are dynamic. Supporting the creation of associations is not a scalable strategy given the amount of effort involved, nor is it conducive to autonomous community management, given the heavy reliance on external guidance and support.

However, our new focus on NTZs does not mean that we will exclude other measures: where fishers are interested in management measures such as temporary octopus fishery closures, we will support their implementation. And we will continue to promote complementary measures that aid reef restoration, such as the use of wooden sticks for octopus gleaning. Together, these measures can be integrated into the development of Locally Managed Marine Areas (LMMAs).

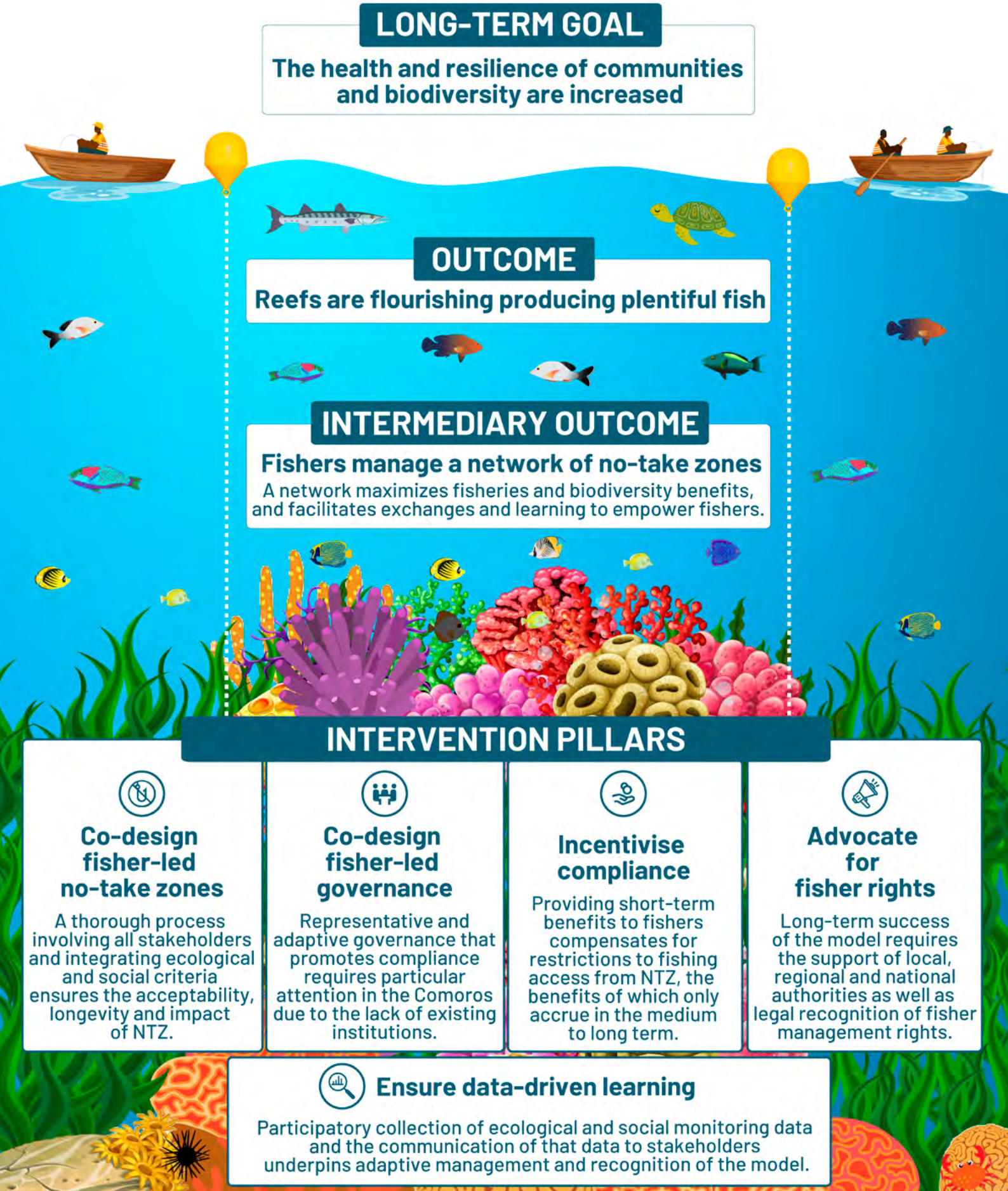
We will also work to integrate support for pelagic fishers into our focus on reefs, givent that reefs cannot be isolated from the wider marine ecosystem. Most pelagic fishers also fish reefs, and support for improving revenues from pelagic fisheries can reduce pressure on reefs whilst avoiding negative impacts from NTZs on fishers' livelihoods. Several of the incentives that we have trialled successfully to date, such as the provision of solar-powered freezers and FADs, have functioned in this way.

[6] Bergseth et al (2023). Closing the compliance gap in marine protected areas with human behavioural sciences. Fish Fish .

[7] McCabe et al (2024). Impacts of locally managed periodic octopus fishery closures in Comoros and Madagascar: short-term benefits amidst long-term decline. Frontiers in Marine Science.

3. THEORY OF CHANGE

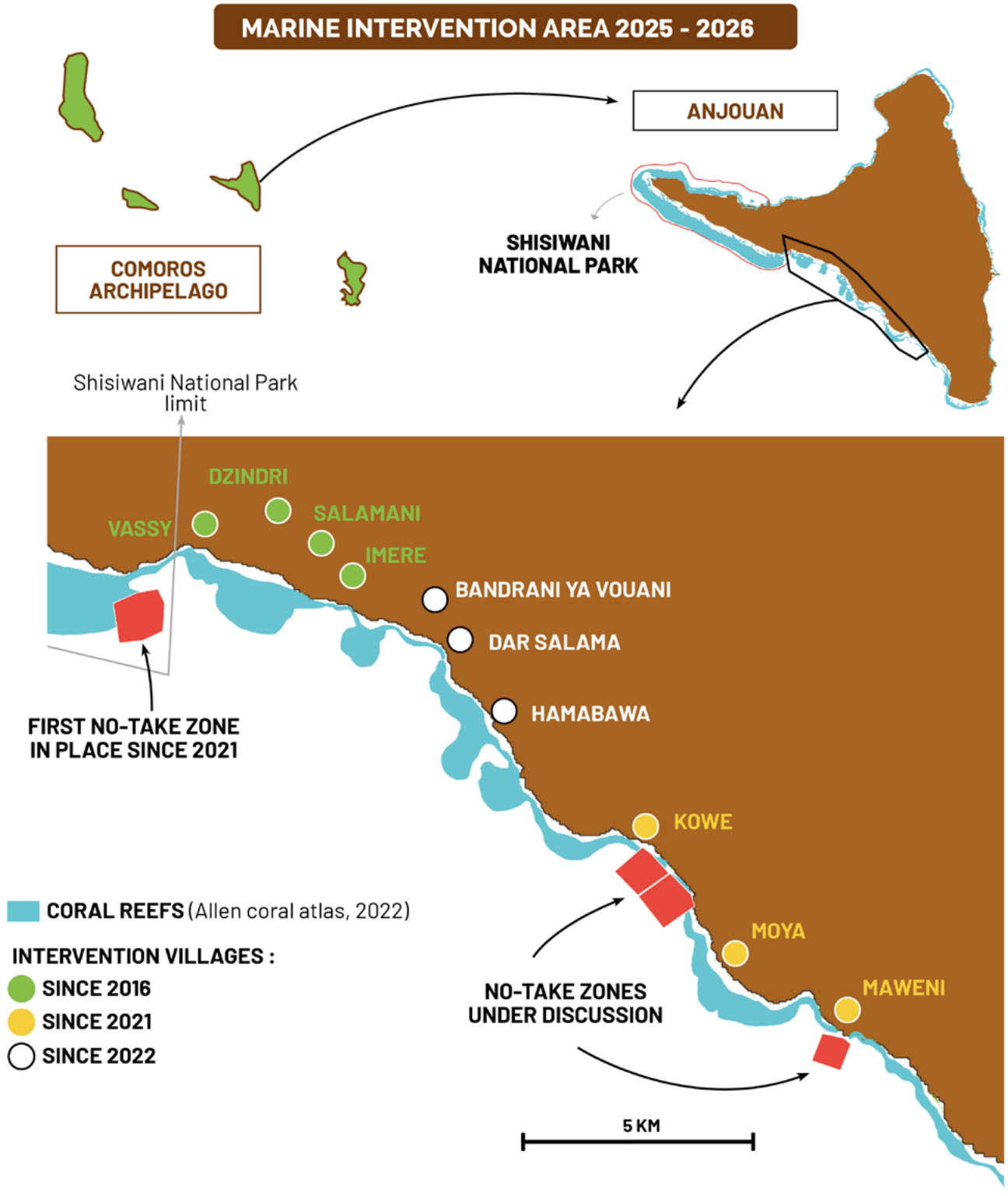
Our Theory of Change has been developed over the past 18 months based on a decade of experience, and input from a wide range of stakeholders and advisors.



4. INITIAL EXPANSION PHASE IN SOUTHWEST ANJOUAN, 2025-2026

Until the end of 2026 we aim to co-design with fishers a network of at least five NTZs to restore reefs in the southwest of Anjouan (see map below). We selected this area for intervention because of its extensive but degraded coral reefs, a high dependence on those reefs for subsistence, and a lack of other marine interventions.

In this first phase we are not prioritizing ensuring ecological connectivity between the five sites; our focus will be more on developing a community of practice. We will promote learning across the network through exchange visits and mutual training opportunities, and through facilitating annual general meetings that include representatives of all NTZ management groups and other stakeholders.



During this initial expansion phase we will apply our intervention pillars as follows:

Co-design fisher-led no-take zones

The success of the first NTZ created in 2021 is inspiring fishers from neighbouring villages to implement their own NTZ. Three further NTZ locations are nearing finalisation through combining scientific analyses with local knowledge, involving extensive scenario-planning and consultation with fishers. Subsequent locations will be selected to integrate more fisher communities into the network. We aim to ensure that all types of fishers, especially those marginalised and at risk of losing out from restrictions, are involved in discussions and have the chance to learn from peer groups via exchange visits.

Co-design fisher-led governance

We will co-create two-tier governance mechanisms for each NTZ to ensure that fishers have more power over decision-making, including all fisher groups in discussions and representation. Other local stakeholders such as village leaders, mayors' offices, the coastguard and park authorities will be invited to play a validating and supporting role. Training and coaching will be provided to governance bodies to develop leadership and implementation capacity. Given the complexity of this pillar in the context of the Comoros, a plurality of mechanisms will be welcomed to test different models during this initial expansion phase and increase learning across sites.

Incentivise compliance

For each NTZ we will identify potential negative effects of access restrictions on different fisher groups and design incentives to mitigate risks. We will tie incentives to management actions and prioritise incentives that are integrated into the fisheries value chain, as these bolster existing livelihood activities and can provide multiplier effects. Incentives that in addition target increased productivity of pelagic fisheries can contribute to reducing pressure on reef fisheries – for example FADs and solar-powered freezers. At the same time, we will continue to research more general, indirect measures such as agricultural support, financial inclusion and community investments, and how they might fit into our theory of change. The identification, cultivation and strengthening of intrinsic motivations will remain integral to our work to foster long-term commitment for marine conservation.

Advocate for fisher rights

We will continue to collaborate with local authorities to ensure their support for the model, and to reinforce their role in enforcement. We will also continue to collaborate with the DGRH to strengthen the existing legislative framework on fisheries management, in particular the recognition of access, exclusion and management rights of small-scale fishers over coastal waters and formal recognition of the fisher-led NTZ model.

Ensure data-driven learning

Ongoing fisheries catch and reef monitoring will provide a baseline on key indicators such as reef fish species biomass and coral cover, and fishers' catch per unit effort. Socio-economic evaluations will assess the impact of management and incentives on perceptions and livelihoods, and compliance with management measures (alongside infractions logbooks). Feedback sessions will be conducted regularly in each community, led by fishers, and with authorities, to discuss potential changes and to increase buy-in. This learning environment will support adaptive management as the model develops.

Fisher leaders, and Dahari, national park and local authority representatives sign the bylaw to officialise the first fisher-led NTZ in the Comoros in August 2021.

5. TOWARDS A NATIONAL NETWORK OF NO-TAKE ZONES, 2027 ONWARDS

From 2027, we will collaborate with key stakeholders to build a roadmap for implementing a national network of fisher-led NTZs, focusing on sites that can ensure ecological connectivity across the network. We will aim to scale our work through three mechanisms :

- Expanding our own operations to support fishers in other rural communities in implementing NTZs. Our own expansion will be focused on Anjouan where our marine team is based, but we will also explore the possibility of developing marine interventions in Grande Comore (where we already manage a terrestrial intervention) and in Mohéli.
- Supporting the Comoros National Parks Agency to implement fisher-led NTZ within the boundaries of the four marine National Parks. The first NTZ we facilitated was within the Shisiwani National Park, which provides a potential model for future collaboration.
- Partnering with other NGOs to implement fisher-led NTZs in their areas of intervention both inside and outside National Parks.

The zone in the southwest of Anjouan earmarked for the initial expansion phase has a human population of about 20,000 (National Census, 2019) and covers 425 hectares of reef - 4% of all the reefs in the Comoros and 10% of the reef area of Anjouan (Allen Coral Atlas, 2022). The possible area for expansion covers all 10,500 hectares of reef in the Comoros, given the potential to collaborate with the National Parks. These reefs play an important role in the food security of the c. 350,000 people who live in coastal rural communities.

During 2025 and 2026, in preparation for expansion of our programme we will:

- Continue to reinforce collaboration with the DGRH, Comoros National Parks Agency and marine-focused NGOs;
- Undertake ecological and larval connectivity analyses on a national scale to identify priority reef areas for protection from both an ecological and fisheries perspective;
- Scope potential sites for new NTZs, meet with fishers, and invite them to meetings of the network;
- Capitalise on learning from the initial expansion phase with the participation of all key stakeholders;
- Refine monitoring methods and analysis to facilitate impact evaluation.

Participants at a 2023 workshop to share experiences on co-management of marine resources organised with the DGRH and Blue Ventures, including delegations from Senegal and Madagascar.

6. STRENGTHS AND NEEDS

Our marine programme benefits from several key strengths which will underpin the delivery of this strategy:

- An experienced marine team of 19 supported by our Co-Directors, our Board of Trustees and a network of advisors from a range of international institutions;
- An effective collaboration with the DGRH in partnership with Blue Ventures which led to the organisation of a national workshop to strengthen co-management approaches in 2023 and a high-level exchange trip to Madagascar in 2024, with a further exchange trip to Senegal planned for 2025;
- Collaborations already established with the Comoros National Parks Agency, the Anjouan Fishers' Trade Union and the NGO AIDE, to support learning from this phase and expansion from 2027;
- Strong relationships with all ten of the communities in the core intervention zone in the southwest of Anjouan, established progressively since 2016. Seven of these communities are already working to implement NTZs;
- Contracted mapping of ecological and larval connectivity across the Comoros underway to identify priority areas for scaling up from ecological and fisheries perspectives;
- A funding commitment of $500,000 from the Critical Ecosystem Partnership Fund securing the work until end 2025, with additional funding contributions from Tusk Trust, Blue Ventures, and the Australian Embassy for the Comoros.

To ensure the successful realisation of our goals, we are looking for funders who support our vision for the restoration of the reefs of the Comoros and can provide us with the flexibility that will allow us to manage adaptively as we continue to learn and evolve. Our funding need for 2026 is €400,000 euros, which will increase in line with expansion from 2027.

Dahari team, 2024.

Acknowledgements

We are grateful to all who have contributed time, energy and thoughts to this strategic review:

- The funders of this process: Australian Embassy for the Comoros, Blue Ventures, Critical Ecosystem Partnership Fund, Tusk Trust.

- The 56 fishers and representatives of local authorities from Anjouan who participated in focus groups and meetings on the strategy.
- Our consultant Marc Fruitema, for his input throughout the process, as well as all those who contributed via phone calls, meetings and/or reviews of drafts: Bouchourane Aoussidine (Anjouan Fishers' Trade Union), Amil Affane Nounou (Anjouan Regional Fisheries Director), Timur Jack-Kadioglu (Arcus Foundation), Gildas Andriamalala, Paul Antion, and Garth Cripps (all Blue Ventures), Youssouf Ali, Said Abdoulbak Attoumane Bacar, Mohamed Nourdine Said (all Direction Générale des Ressources Halieutiques), Tanguy Nicolas (Fauna and Flora), Moustarchide Ben Soudjay (Institut National de Recherche pour l'Agriculture, la Pêche et l'Environnement), Sean Southey (Commission on Education and Communication, IUCN), Fred Nelson and Liz Day (Maliasili), Lorna Slade (Mwambao), Al Harris (Ocean Resilience and Climate Alliance), Kitty Brayne (Well Grounded), Charlie Gough, Hugh Govan, Rupert Quinlan and Paul Siegel (all independent).

Daharí

We would love to hear from you if you are interested in collaborating with us!
Please write to our Marine Strategy Director Effy Vessaz
effy.vessaz@daharicomores.org

Hombo
Mutsamudu - Anjouan
B.P. 277
Comores

daharicomores.org

@DahariComores

(+269) 771 40 48