Climate adaptation for fisheries in South Africa

ONE OCEAN HUB

Eco-ACE

Ecosystem-based adaptive capacity through community engagement

GCRF

UKRI UK Research and Innovation

Background

South Africa has a strong commitment to adapt to climate change both through international agreements and national legislation. The Climate Change Bill (B9 - 2022) has recently been passed by Parliament and is progressing towards assent. This Bill aims to provide a coordinated response to climate change, strengthen resilience, mainstream adaptation, contribute to reducing greenhouse gas emissions, transition towards a low carbon economy, deliver international commitments, and preserve the planet. Once promulgated, this Act binds all organs of state and prevails over other legislation where there is conflict. Other instruments to support climate adaptation include the National Climate Change Adaptation Strategy (2020), Sectoral Adaptation Response Plans that should include fisheries, as well as local climate adaptation plans which are currently in preparation.

South African fisheries are diverse and include small-scale, recreational, and commercial fisheries, which target many species in a wide range of habitats, using a variety of gears. The capacity and requirements to adapt to climate change are likely to vary greatly between fisheries and locations. In addition, aspects of management that pertain to fisheries are covered by different directorates within the Department of Forestry, Fisheries and the Environment (DFFE) including Fisheries, Oceans & Coasts, and Climate Change & Air Quality. This institutional fragmentation makes the development of an overarching Fisheries Adaptation Response Plan difficult to formulate, which has led to limited progress and the need to generate momentum on climate adaptation for South African fisheries. Given the importance of fisheries both economically and culturally, a holistic and inclusive approach is needed to ensure that the sector can adapt to climate change and that it contributes to the future low-carbon economy.

Current status

Most assessments of climate risk for fisheries use the Intergovernmental Panel on Climate Change (IPCC) approach (Box 1), although being framed around the assessment of perceived 'vulnerability'. International studies suggest South Africa could lose up to 21% of fishery yield by 2100[1], but that fisheries in South Africa have scored a low or moderate risk[2-4]. However, a Climate Change Adaptation & Mitigation Plan for fisheries was published by the former Department of Agriculture, Forestry, and Fisheries (currently DFFE) in 2017 that showed South Africa's line fish and small pelagic sectors were highly vulnerable, and rock lobster, squid, and marine aquaculture moderately vulnerable[5]. Workshops held by DFFE with the fishing sector resulted in draft policies in 2017 for adaptation focusing on product beneficiation, targeting new resources, and new technologies[6]. However, progress with finalising the policy was halted due to a restructuring of DFFE in 2018.

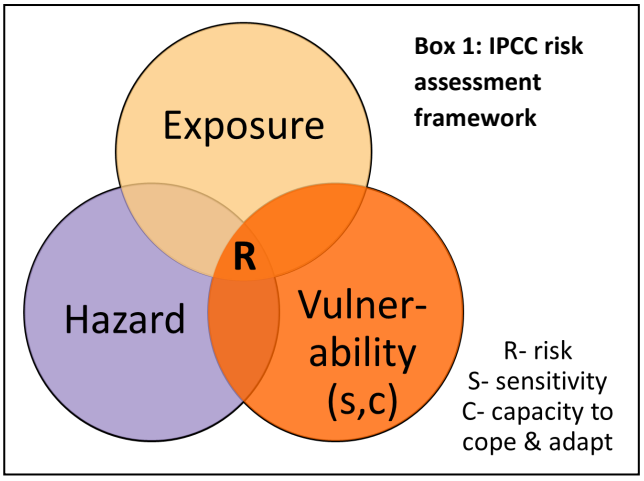
A review of published literature and reports showed that studies tend to focus on South Africa in the international context, the Benguela ecosystem specifically[7], or local small-scale fishing communities. For example, studies have assessed vulnerability and adaptation of small pelagic fisheries in Benguela countries[8], and local vulnerability and adaptation of some small-scale fishing communities, squid and rock lobster fisheries[9-11]. Most studies focus on ecological impacts and community vulnerability, but assessment of institutional and governance systems, climate justice, cross-sectoral interactions, land-sea interactions, as well as social-ecological tipping points were lacking.

Transformative climate adaptation

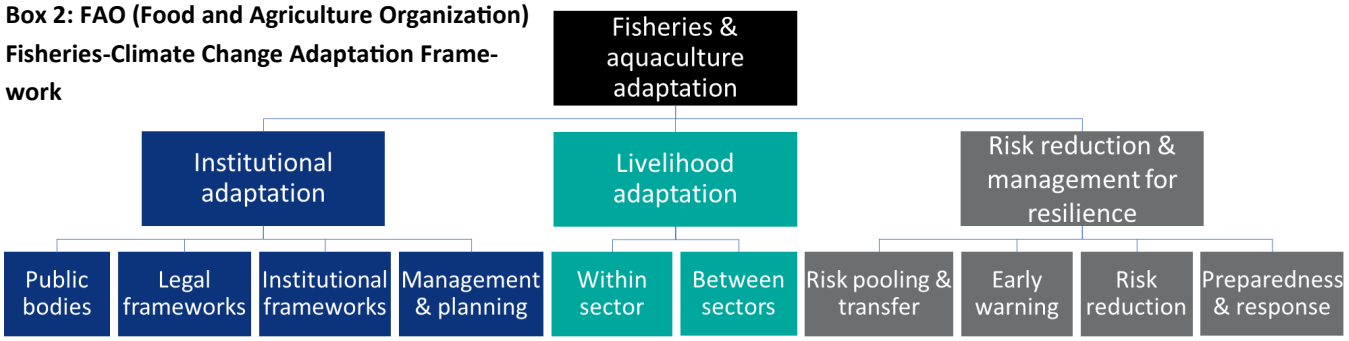
Transformative climate adaptation involves a system-wide change and necessitates more than technological change through consideration of social and economic factors that, with technology, can bring about rapid change at scale[12]. Adaptation in fisheries can take many forms that broadly fit into three main categories: institutional; livelihood; and risk reduction (Box 2). Approaches are likely to be fishery and context specific, so can be challenging to identify and implement.

The challenges are diverse, but in the South African context can be broadly categorised into: connections, evidence, policy, and solutions. There is need to integrate local and indigenous knowledge and experience into adaptation plans which are currently formulated by scientists and managers. This means that there can be limited recognition by communities of the need to embed adaptation in their daily lives nor the potential to transform their livelihoods. Evidence is not available in a palatable form for the marine environment as is the case with the terrestrially focused 'Green Book'[13], with issues around natural variation, societal benefits, and uncertainty in outcomes largely unexplored. There is currently inertia in policy due to the fragmented nature of directorates alongside issues that cut across many legislative areas, with limited funding and resources to deploy. Finally, solutions are developed in insolation from the community, lack the longevity of funding, are not scalable, and without the appropriate skills.

Despite these challenges, there are 'bright spots' where climate adaptation in fisheries is being driven by local communities with the support of researchers and NGOs (Box 3). These provide a template for others to follow.



Box 2: FAO (Food and Agriculture Organization) Fisheries-Climate Change Adaptation Framework



Box 3. Building resilience among women fishers in St Helena Bay

Climate and environmental changes have been observed by small-scale fishers from St Helena Bay. Women play an important role in the value chain and are also involved in collecting intertidal resources such as mussels, limpets, and seaweed which are used as a food source - fresh, dried, or pickled. Women fishers from Cove in St Helena Bay identified lack of markets as a key constraint to sustainable livelihoods as part of a community-based socio-ecological vulnerability assessment facilitated by UCT and a non-profit organisation, ABALOBI, with support from FAO and the Benguela Current Commission (BCC). With funding from a follow-up FAO project, ABALOBI was able to support the women take their ideas forward by facilitating direct access to broader markets for the fishers through their online platforms - ABALOBI MARKETPLACE and PANTRY[14].

Implementation

To re-energise previous efforts by DFFE to support climate adaptation in fisheries, a step-change in approach is needed. Outputs from a workshop with DFFE and researchers from the One Ocean Hub and Eco-ACE projects in October 2023 have been used to identify a way forward through the CHANGE model: **C**o-create solutions; **H**olistic approaches; **A**lign knowledge; **N**ormalise adaptation; **G**rant resources; and **E**vidence generation (Box 4). Ten recommendations associated with the CHANGE model are described below.

Co-create solutions with communities that meet their needs:

1. Co-design solutions with fishers and the broader community that are fit-for-purpose, can be implemented easily and where benefits are realised quickly. It is not necessary to always do the big things – it is important to recognise and learn from small initiatives.

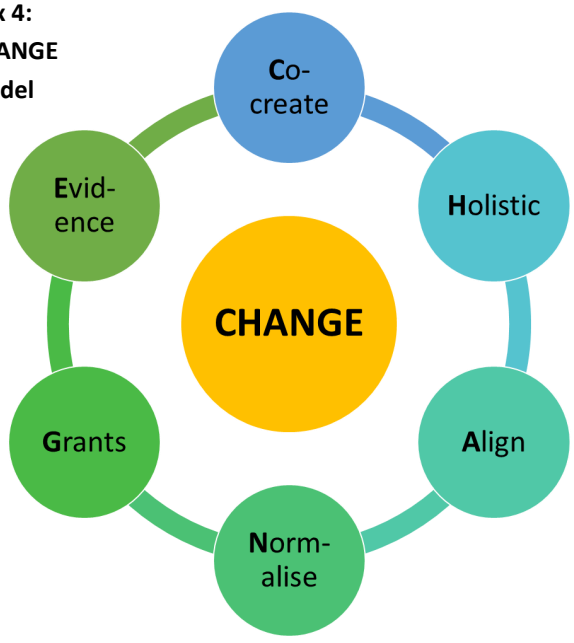
2. Create effective avenues to communicate that allow framing of climate adaptation that resonates with fishers and communities, transcends issues with literacy, and works with local champions within the community to facilitate implementation.

Holistic approaches that cut across policy areas & institutional silos:

3. A whole government approach is needed to ensure that fisheries are included in the wider climate and ocean management narratives. This involves generating a conceptual diagram of the policy landscape around climate adaptation, identifying relevant government departments that are mandated or should contribute, and aligning policies on this basis to drive delivery of adaptation.

4. A working group should be set up within DFFE to support climate adaptation for fisheries creating a 'community of practice' that includes fishers from all sectors, government, researchers across multiple disciplines, and civil society.

Box 4: CHANGE model



Align knowledge across scales:

5. Connections should be made between high-level top-down policy and local bottom-up approaches for climate adaptation of fisheries to ensure that approaches are scalable and appropriate, with ongoing monitoring/evaluation of the benefits against a baseline.

Normalise climate smart policies & adaptation:

6. Use climate smart policies to mainstream adaptation approaches, so that it becomes part of business-as-usual which fisheries and communities can engage with.

Grant resources & funding required to adapt:

7. Resources should be made available within DFFE to drive forward climate adaptation for fisheries.
8. Long-term funding is needed to support implementation for both researchers (e.g. joint DFFE/NRF calls) and local communities.

Evidence generated from all sources to underpin decisions:

9. Generate the evidence required through careful framing of DFFE evidence needs (e.g. socioeconomics, co-design approaches) and integrate fisher knowledge as a key evidence source.
10. Decision-making tools should be implemented to ensure the evidence is synthesised and available for use by municipalities. This should take the form of expanding integrated coastal zone management evidence from the 'Green Book' to add a 'Blue Book' to support decisions about the marine space.

Acknowledgements

This document is based on outcomes from a workshop that aimed to co-develop approaches with policy makers to support transformative climate adaptation of fisheries in South Africa funded by OneOceanHub and Eco-ACE.

Suggested citation

Hyder K., Sowman, M., Fernandes, M., Gammage, L., Ortega Cisneros, K., Mbatha, P., Potts, W., Rivers, N., Sauer, W., Shannon, L., Sink, K, Snow, B., Townhill, B.L., van Maltitz, G., Pinnegar, J.K. (2024) Climate adaptation for fisheries in South Africa. One Ocean Hub Report, 4 pp. https://doi.org/10.14465/2024.ooh01.pol

References

1. Cheung et al. (2018) FAO Fisheries and Aquaculture Technical Paper No. 627 (chapter 4). 2. Allison et al. (2009) Fish & Fisheries 10: 173-196. 3. Blasiak et al. (2017) PLOS ONE 12: e0179632. 4. Ding et al. (2017) Marine Policy 83: 55–61. 5. Hampton et al. (2017a) Report of the DAFF Workshop on Fisheries Vulnerability to Climate Change, Foretrust Building, Cape Town. 6. Hampton et al. (2017b). Report of the DAFF Workshop on Adaptation to Climate Change in the South African Marine Fisheries and Marine Aquaculture Sectors. 7. De Young et al. (2011) FAO/Benguela Current Commission Workshop 1-3 November 2011. 8. DAFF (2017) Report on the DAFF Workshop on Fisheries Vulnerability to Climate Change, 2-3 September 2015. 9. Ortega-Cisneros et al. (2018) African Journal of Marine Science, 40: 279-292. 10. Cochrane et al. (2020) African Journal of Marine Science, 42: 473-493. 11. Sowman (2020) Development. 36: 100578. 12. DFFE (2019) Final National Climate Change Adaptation Strategy. 13. GREENBOOK https://greenbook.co.za/. 14. https://www.fishwithastory.org.