National Initiative – Climate Smart Fisheries

Between 2017 and 2024 the Fisheries Research Development Corporation and CSIRO funded a series of projects that have summarised the vulnerability of Australian fisheries (across State and Federal jurisdictions) to climate change, generated projections for Australian fish stocks and created guides to help with vulnerability assessments and identification of adaptation options for commercial fisheries.

The most recent of these projects dealt with training staff in State and Territory fisheries agencies on the vulnerability assessment and adaptation option identification process (as summarised in the Fisheries Climate Adaptation Handbook[1]). Implementation plans and actions are a separate step – to be undertaken by the individual jurisdictions (as local context and policy considerations will be important for those plans).

A joint workshop was held with fisheries agency representatives from each Australian jurisdiction, as well as some industry representatives. This workshop talked through the procedures outlined in the handbook and experience in using the process in their jurisdictions, considering lessons learnt and future directions. The workshop participants felt further work was needed to help adaptation via the creation of agency and practitioner networks and activities with collective benefit at the national scale. The group jointly proposed a national initiative to facilitate information sharing – within and across jurisdictions and across backgrounds (science, industry, management, traditional owners, recreational fishers and any others interested in the topic). That idea is outlined in this concept note.

This national initiative would act as a central repository of learnings and information to help adaptation and provide critical mass for adaptation activities to amplify them beyond their original scope. This would not remove the need to transcribe that information back to a jurisdiction for implementation (as context dependency will be critical for success).

This workshop participants defined the major content of the national initiative, drawing up a list of components that form national level actions, approaches and principles that can help achieve positive adaptation (similar to innovation deriving from peer-based knowledge sharing in agriculture), including:

1. **National adaptation guidelines:** A document analogous to the national harvest strategy guidelines dealing with adaptation and management under climate change conditions. The existing adaptation handbook provides risk assessment procedures and supports identification of candidate management options. These new guidelines would lay out the steps to take to leverage the evidence base provided by the handbook to develop final operational and policy-level adaptation management strategies and adaptation plans. The guidelines document would include:
    a. a definition of concepts (supporting consistent terminology across states)
    b. information to consider in climate change risk assessments, as well as stock assessments
    c. adaptation options useful in the Australian context
    d. information on how to build climate understanding and drivers into decision making
    e. a flow chart / decision tree with steps to take at the fishery scale to get proactive action
    f. guidance on precursors for managing climate change impacts (what needs to be sorted before it is possible to get to climate change transformations)
    g. how to develop a new fishery from the beginning so it is climate aware (in terms of operations, management and even supply and value chains)

[1] https://research.csiro.au/cor/research-domains/climate-impacts-adaptation/climate-adaptation-handbook/

h. how to respond to range extending species
i. how to approach/negotiate on resource sharing
j. processes for sharing of knowledge on components across jurisdictions (e.g. via collating approaches across jurisdictions to look for alignment and learn any lessons on how to do it, what works or does not work, time and resources needed)

It was felt such a document would provide fishers and managers with a "central point of information" that they could pick up, read, digest and use as a basis for planning how to undertake the adaptation option identification, prioritisation, planning and implementation processes. It would also be important to have a clear process for ongoing review and improvement.

2. **Community of practice:** This would act as an enabling condition that facilitates adaptation learning and knowledge sharing, curating, and distributing information (helping the lessons shared in any national guideline to update quickly even between reviews). Such a network could leverage the Australian Society for Fish Biology (ASFB) managers forum and coordinated workshops on management relevant topics. The topic of adaptation and climate aware management could be made a regular part of these workshops, with the content acting as a basis for the guidelines.

3. **Forecast and climate information:** This would provide a centralised supply of forecasts for fisheries hosted by a national body (this could be housed within a federal Department (e.g. DAFF), operational body (e.g. BOM) or science agency or repository (e.g. AODN)). This could inform operational decision making, any report cards or environmental information streams provided to decision makers (especially those using weight of evidence approaches). A national body coordinating across the country would be ideal, given the scales involved often overlap jurisdictions and within each individual jurisdictions different Departments/agencies are responsible so there is no naturally existing network that supports a unified process.

4. **National marine climate portal:** A national portal for cross-jurisdictional databases (within jurisdictional databases could feed directly to the portal where allowable under legislation and policy or the infrastructure of the portal could be used with jurisdictional data in a standalone mode). This portal would house:
    a. **National seafood data body:** This would not need be a central warehouse but would connect to different data providers. It would need to allow for suitable security and other protocols so as not to breach legislated privacy concerns. There may also need to be some policy reform to allow for suitable and timely information sharing on cross cutting data needs. Existing data would also need to be cleaned and transformed into a generally useable form (current data sets do not match a standardised form across jurisdictions and even within jurisdictions can change format through time). Developments through the FRDC and Australian Data Research Commons agrifood data exchange initiatives, or the Seafood Industry Australia (SIA) Futures of Seafood initiative, may support this.
    b. **National fisheries and climate information store:** There is a strong desire for a simple check list on what needs to be considered when looking at how climate drives impacts on fisheries and a centralised database (map) of fishing risk and opportunity; what works, what doesn't (i.e. database of success and failures, the FRDC co-funded Sea Change project will help bring this information together initially); and an inventory of experts and consultants and their individual capacity to work on climate issues or provide the best available information on a specific climate-relevant topic (the FRDC co-funded 2023-011 Sea Change project will also help with this information). It was felt that sharing of information allows for coordination of action. It would be important for the knowledge sharing framework to include fishery management, including relevant monitoring and assessment methods; research on climate influence on fisheries; industrial, recreational and customary fishing considerations.

    This portal is similar in concept to the agriculture data exchange that is under development (the Australian AgriFood Data Exchange) and nesting fisheries under that data exchange maybe a good approach, both for longevity but also because it opens the door to agrifood diversification. An alternative portal option would be to have it as part of the fisheries data portal being created by the Futures of Seafood project (led by the Blue Economy CRC and Seafood Industry Australia). That portal is

intended to remain live beyond the end of that project and would be a natural home given the seafood and futures focus. Although the long term host for that portal is not yet clear and it will be critical for the portal to (i) have true long-term availability and (ii) support actual data integration not inject additional administrative layers that ultimately prevent timely access. This means the portal needs to be hosted by an enduring science organisation like Environmental Information Australia Environmental Information Australia being set up by DCCEEW, IMOS or accessible via https://www.climatechangeinaustralia.gov.au/.

5. **Fisheries independent surveys:** To allow for a clearer understanding of change and attribution between fishing and climate influences (as much as possible). This would also provide information on stock boundaries (informing individual jurisdictional spatial management but also overarching bodies like AFMF and reporting like SAFS). This would need to use cost effective means (such as in collaboration with industry, perhaps by providing a quota allocation specifically to support the survey, so it is less burdensome for industry and government). Financing and servicing surveys (logistically and technologically), especially at large spatial scales remains a serious challenge that may require technological advances, new collaborative arrangements (including across marine industries who require environmental information) or other novel solutions to ensure longevity of any survey. Surveys that are more immediately connected to within season responses (such as surveys of juvenile abundance which provide predictions of recruitment and catch that allow proactive management of invertebrate fisheries) represent useful options even if broader surveys are infeasible.

6. **National mandates to assess for climate vulnerability and risk:** Whether as part of WTO regulation, EPBC approvals or other regulatory or certification requirements (i.e., under the proposed Nature Positive legislation), mandatory climate considerations are required under vulnerability assessments (with all species to be assessed by a specific date to identify whether there are bottlenecks in life history creating climate risks to fished species), bycatch assessments, fisheries management plans and industry standards. This may also become the starting point of formal co-management of species that cross jurisdictions. Ideally these mandates would have federal level policy support, but in the interim national coordinating bodies (such as AFMF) could decide upon an informal national standard requirement. The ultimate expectation being that climate vulnerability and risk is seen as a standard requirement in the same way as ecological risk assessment.

For such an initiative to progress with full effectiveness, a number of supporting steps would be required. There would need to be political support for the initiative, so that staff are allocated dedicated time and incentivised to participate, but also because some degree of legislative reform or policy change may be required. For instance, for the data platform to allow for data sharing there would be a need to address in-confidence constraints at the legislative level so that the resolution of data served up from the platform is appropriate to the access rating of the user (e.g. local jurisdictions or users with appropriate clearance and approval could access finer resolution data than would be shared for research purposes or for public sharing). These are all topics already under consideration in the FRDC project *2022-176 - ARDC: Food Security Data Challenges: Increasing food security through liberation of fishing and aquaculture data*.

There would also be a need for long term resourcing for each of the six components, which would likely involve partnership with dedicated organisations, such as IMOS, Geoscience Australia or an extended form of SAFS. Research and Development Corporations (fisheries and agricultural) would likely also have a role in advancing establishment of the content of the components, but also in highlighting the benefits of co-investment in such an undertaking. If all six components are unlikely to be supported as a unified program, then prioritisation may be required followed by incremental establishment.

For further information

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