

Appendix 4-C Barriers that are limiting increased access to tuna for the livelihoods, food security and healthy diets of coastal and urban communities

Component A	Barrier	Description
1.	Uncertainty regarding changes in the local availability of tuna due to climate-related redistribution.	Urban and peri-urban communities in several Pacific Island countries, e.g., Federated States of Micronesia (FSM), Fiji, Kiribati, Marshall Islands, Papua New Guinea (PNG), Solomon Islands, Tonga and Tuvalu increasingly take advantage of the delivery of tuna and associated bycatch transhipped from industrial purse-seine and/or unloaded from longline fishing vessels (both domestic and foreign) while these vessels are in their ports for local distribution and use. There is a general lack of understanding regarding how future climate-induced re-distribution of tuna will affect the utilisation of GCF Participating Country ports as tuna is redistributed to the east and, as a consequence, the local availability of transhipped or unloaded tuna and bycatch.
2	Institutional capacity	Although it is widely recognised that nearshore artisanal FADs ⁱ can help build the resilience of coastal communities to climate change by increasing access to tuna and other pelagic fish species as coral reefs are adversely impacted by warming sea surface temperature (SST) and ocean acidification (see Section 2.3.7), many countries lack the resources and capacity to implement the ‘National FAD Programmes’ recommended by SPC at scale. ^{ii,iii} In particular, governments have been unable to invest in the following key areas at the necessary level: installing and maintaining comprehensive FAD infrastructure; training communities in safety-at-sea and effective small-scale FAD-fishing methods; improved designs for small boats to operate safely further offshore; providing easy-to-access forecasts of safe sea conditions for small-scale fishers; and systems to quickly replace FADs lost during cyclones. ^{iv}
3	Most fishers in PICs generally fish close to shore for safety reasons ^v	<p>There are challenges in overcoming the preference for nearshore fishing for reef fish and other demersal fish species among PIC small-scale and subsistence fishing communities and encouraging their engagement in FAD-fishing further from shore (including for reasons of safety, equipment/vessel capability or traditional practice).</p> <p>This barrier needs to be acknowledged and addressed when developing national FAD programmes. For example, most coastal communities in PNG tend to have a strong preference for nearshore fishing. This</p>

		barrier can be addressed by increasing the training of small-scale fishers in safe and effective FAD-fishing methods, and providing these fishers with improved weather forecasts, navigation and safety equipment, so that they can make the transition to fishing further offshore with confidence and safety. Investment in strengthening local or provincial fishing groups should also help ensure that the necessary training is delivered effectively and kept up on an ongoing basis.
4	A traditional dietary preference for reef-associated resources	Challenges in bringing about a shift in food preferences from reef and lagoon fish species to tuna and other oceanic pelagic fish that may slow down acceptance of FAD-caught tuna and disadvantage the economics of these operations. Although many Pacific Island countries have made efforts to encourage greater consumption of tuna and other pelagic fish species, and encouraged offshore fishing operations, some of these efforts have met with resistance based on food preferences for reef or lagoon fish species. ^{vi} If customer demand is not there, fishers will switch back to reef-based fishing as long as resources can support them. This barrier will be addressed by a) stronger regulations on reef and lagoon fisheries, b) consumer awareness of the effects of climate change on coral reefs, and c) advertising campaigns and other culturally appropriate strategies to encourage consumption of tuna, such as sharing processing and cooking methods. ^{vii}
5	Infrastructure and distribution constraints	In addition, distance to domestic markets and lack of infrastructure (such as cold chain) to support the distribution of FAD-caught tuna are issues in many places which need to be addressed to ensure economically viable small-scale fishing operations, and safe and efficient supply of tuna to the urban centres. This barrier will be addressed through supply chain development and market analysis to ensure that FAD-caught tuna is of good quality and that it is caught, distributed and sold efficiently. For example, Vanuatu has invested in cold storage in remote areas as part of its current coastal FAD programme to ensure high-quality, reliable distribution and market reach.
6	Ad hoc rather than instituted approach to long-term support for FAD programmes	Lack of long-term strategy within some PIC governments to prioritise and support coastal FAD tuna fisheries through capacity building, establishing fishers' groups/associations and investing in government infrastructure programmes. This barrier emphasises the need to learn from previous programmes in the region that have either failed or succeeded. Evidence shows that FAD programmes that have made a lasting difference have considered coastal FADs as fundamental national infrastructure, which has ensured that they receive

		<p>the necessary ongoing budget support and maintenance to make these fisheries successful beyond individual FAD deployments.^{viii}</p> <p>Consideration should therefore be given to making long-term commitment to deploying and maintaining FADs, as part of the national infrastructure for food security, supported by the national recurrent budget.^{ix} When and where possible, the costs to the national recurrent budget can be reduced with assistance from development agencies. However, the recurrent budget should be used to progressively expand and maintain national FAD programmes in the absence of such support.</p>
7	Lack of models and examples of private and public sector cooperation.	<p>There are only limited successful models and examples in the region of the private and public sector cooperating to support FAD-fishing to contribute to local food security, beyond usual business operations. The investment by the National Provident Fund (NPF) in a commercial fishing company in Solomon Islands is a commendable example, both in terms of food security and local socioeconomic benefits.^{x,xi} However, the region has been slow to replicate policies and models that enforce such ‘win-win’ relationships. Rather, there is a general lack of legislation, policies, and incentives for the private sector to assist coastal and urban communities to harness more tuna for food security. Based on the advice from the AWS, more proactive regional strategies could be developed with the private sector to ensure infrastructure, investments and fishing capacity evolve to help meet the regional food security goal related to tuna. For example, consideration could be given to incentivizing local canneries to provide more “dark meat tuna”, to ensure per capita supply of this popular product is not compromised. New ways of distributing bycatch must also be developed.</p>
8	FAD loss and capacity to maintain coastal FADs	<p>Another barrier to establishing small-scale FAD fisheries has been the lack of regular and emergency maintenance of FADs damaged or lost in cyclones and other regular storms, leading to setbacks or interruptions to initiatives to increase fishing for tuna and other large pelagic fish in nearshore waters. National FAD programmes need to ensure that damaged or lost FADs are repaired or replaced on a routine basis, like any other critical national infrastructure.</p>
9	Procurement logistics and costs of FAD materials	<p>PICs are remote from all sources of FAD materials and equipment, which needs to be ordered and shipped from overseas. In addition to presenting procurement challenges, the FAD-related requirements of most countries are relatively small with limited capacity to date to generate economies of scale. As a consequence, the relatively low level of activity, promoted on an ad hoc basis to date as opportunities to source external funding materialises, has not generated the volume of sales nor</p>

		enduring relationships with suppliers that will result from a more strategic approach to the development and implementation of national FAD programmes.
10	Food hygiene, processing and distribution concerns	Many countries lack the availability of affordable materials, equipment and basic hygiene awareness for local fish processing, storage and distribution support broad accessibility of fish to peri-urban and more distant communities. This is exacerbated when seasonal fluctuations and cyclones disturb local fishing activities for long periods. This barrier can be overcome by improving, replicating and scaling existing drying and salting post-harvest methods that prolong the shelf life of fish in remote situations, and exploratory programmes, such as the Parties to the Nauru Agreement (PNA)'s tuna and bycatch micro-canning ^{xii} initiative.
11	Issues affecting accessibility and processing of fish transhipped or unloaded from commercial operations	Price is the primary driver for the utilisation of frozen and brined transhipped fish in most PICs as, from marine product options, brined tuna generally enter the market at the lowest price point. ^{xiii} The barriers in relation to increased utilisation of brined tuna are i) a traditional preference for plate-sized reef fish, ^{xiv} and ii) limited processes to convert brined fish to a more appealing product. ^{xv} The tuna unloaded from longline vessels are generally larger in size and require portioning prior to presentation for general sale; the primary local market for these fish is restaurants and hotels.

ⁱ There are many terms used to describe FADs, in this context, nearshore artisanal means FADs that are usually within the 12 nm 'territorial waters' zone, are anchored and utilised by coastal small-scale fishers, as opposed to offshore drifting FADs that are used by the industrial fleets; see SPC Policy Brief 19/2012 'Fish aggregating devices (FADs)'.

ⁱⁱ Anon. 2017. SPC Policy Brief #31: Sustainable national artisanal FAD programs: what to aim for. Noumea, New Caledonia: Pacific Community. 4 p <https://fame1.spc.int/en/publications/policy-briefs>

ⁱⁱⁱ Chapman L. *in prep*. Regional Report: Feasibility of scaling-up National Fish Aggregating Device (FAD) Programmes in all 14 participating countries. Technical Study prepared for the Pacific Community as a contribution to a funding proposal being prepared for submission to the Green Climate Fund (GCF). October 2023. Lindsay Chapman Consulting Pty Ltd, Brisbane, Australia. 92 pages. <https://fame1.spc.int/documents-in-support-funding-proposal-green-climate-fund-regional-tuna-programme>

^{iv} To meet the regional goal described in SPC. 2016. Framework for Resilient Development in the Pacific: An Integrated Approach to Address Climate Change and Disaster Risk Management (FRDP) http://tep-a.org/wp-content/uploads/2017/05/FRDP_2016_finalResilient_Dev_pacific.pdf

^v Except for communities resident on oceanic islands and atolls.

^{vi} Brewer T., Kottage H., Andrew N. *in prep*. Options for supplying dietary protein for growing Pacific Island populations. Report prepared for the Pacific Community. 93 pages. <https://fame1.spc.int/documents-in-support-funding-proposal-green-climate-fund-regional-tuna-programme>

^{vii} For example, Conservation International's Fiji and Timor-Leste programmes include projects with women to share information on different ways to process and prepare tuna to improve its taste.

^{viii} R. Gillett and M. McCoy. 2019. A Survey of Fish Aggregation Devices and Fisher Associations in Selected Pacific Island Countries. FAO/SPC publication.

^{ix} Chapman L. *in prep.* Regional Report: Feasibility of scaling-up National Fish Aggregating Device (FAD) Programmes in all 14 participating countries. Technical Study prepared for the Pacific Community as a contribution to a funding proposal being prepared for submission to the Green Climate Fund (GCF). October 2023. Lindsay Chapman Consulting Pty Ltd, Brisbane, Australia. 92 pages. <https://fame1.spc.int/documents-in-support-funding-proposal-green-climate-fund-regional-tuna-programme>

^x Albert, J.A., Beare, D., Schwarz, A.M., Albert, S., Warren, R., Teri, J., Siota, F. and Andrew, N.L. 2014. The contribution of nearshore fish aggregating devices (FADs) to food security and livelihoods in Solomon Islands. *PLoS One*, 9(12), p.e115386.

^{xi} MRAG Asia Pacific. 2022. Policy Options to Increase the Contribution of Tuna Fisheries to National Food Security Across FFA Members. Report prepared for the Forum Fisheries Agency. 75 pages.

^{xii} Canning (or jars) gives a highly nutritious protein source with a long shelf life that does not need ice or freezing.

^{xiii} MRAG Asia Pacific. *in prep.* Adapting tuna dependent Pacific Island communities and economies to climate change: Existing and future needs and conditions for distributing tuna bycatch to urban and peri-urban areas (GCF Study 5). Report prepared for the Pacific Community. 44 pages. <https://purl.org/spc/digilib/doc/5t6n9>

^{xiv} Brewer T., Kottage H., Andrew N. *in prep.* Options for supplying dietary protein for growing Pacific Island populations. Report prepared for the Pacific Community. 93 pages. <https://fame1.spc.int/documents-in-support-funding-proposal-green-climate-fund-regional-tuna-programme>

^{xv} MRAG Asia Pacific. 2022. Policy Options to Increase the Contribution of Tuna Fisheries to National Food Security Across FFA Members. Report prepared for the Forum Fisheries Agency. 75 pages.