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Title:	Summary of PICT aquaculture technical issues, challenges and priority needs
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Summary/short description/key points:

The Regional Technical Meeting on Coastal Fisheries and Aquaculture (RTMCF4) focuses on the main technical issues affecting coastal fisheries and aquaculture in support of better science-based resource management and the equitable access to resources. Since RTMCF3 SPC Pacific Island Country and Territory (PICT) members' have been asked to identify their immediate coastal fisheries and aquaculture technical issues, challenges and priority needs.

For RTMCF4 all PICT fisheries agency participants were sent a brief questionnaire on their national coastal fisheries and aquaculture technical issues, challenges and priority needs. This Information Paper summarises the submissions received by SPC member PICTs into common themes across the region for, a) priority technical needs; and b) technical issues or challenges. The submissions from March (postponed RTMCF4) have been considered along with those from September/ October. All the submissions received have been captured in full in the summary table, provided as Information Paper 6.

Recommendations:

1. Participants are invited to note the aquaculture technical issues, challenges and priority needs identified by members across the region, and
2. use this information as background to discussions during RTMCF4.

Summary of PICT aquaculture technical issues, challenges and priority needs

Introduction

1. The overarching theme of the 4th Regional Technical Meeting on Coastal Fisheries and Aquaculture (RTMCFA4) is to discuss and address some of the main technical issues affecting coastal fisheries and aquaculture in support of better science-based resource management and the equitable access to resources, by capturing lessons learned from the ‘response phase’ of the COVID-19 pandemic, and identifying approaches and priorities as the region transitions to the ‘recovery phase’ in 2021-22 and beyond.
2. The RTMCFA meetings focus on specific priority issues with input from member country government and territory administrations. For the 3rd Regional Technical Meeting on Coastal Fisheries, which was an in-person meeting in Noumea in November 2019, each member presented their top coastal fisheries and aquaculture priorities, issues and challenges, and reported actions taken since the previous RTMCFA.
3. For RTMCFA4, we want to continue capturing the SPC Pacific Island Country and Territory (PICT) members’ current coastal fisheries and aquaculture technical issues, challenges and priority needs to help inform the FAME Coastal Fisheries and Aquaculture Programme (CFAP) work priorities, but also to encourage PICT to PICT sharing of experiences and information.
4. Due to the time and format constraints of Zoom meetings, for RTMCFA4 we sent all the member nominated PICT fisheries agency participants a brief questionnaire on their national coastal fisheries and aquaculture issues, challenges and priority needs. SPC then compiled the responses received from members and present a summary here for aquaculture.
5. The questions asked were:
 - a. Provide a *very brief* description of your two highest aquaculture priority technical needs.
 - b. *Briefly* outline 2–3 of your main technical issues or challenges in aquaculture over the last year.
 - c. *Briefly* outline 2–3 follow-up actions that your agency has taken related to the [Nov. 2019] [RTMCF3 Outcomes and Agreed Action Plan](#)¹
6. These questions were also asked in February 2021, prior to the planned RTMCFA4 in March 2021, which was postponed at short notice due to COVID lockdown being imposed in New Caledonia just before the scheduled meeting. Where responses were received from members, they have been included together with the responses from PICTs in September/October 2021.

¹ <http://purl.org/spc/digilib/doc/asggs>

Summary of the results for aquaculture

7. The following summarises the submissions received by SPC member PICTs into common themes across the region for, a) priority technical needs; and b) technical issues or challenges.
8. All the submissions received have been captured in full in the summary table, provided as Information Paper 6. Due to the timing of receiving submissions, they could not be translated before the meeting.

Aquaculture priority technical needs

9. The following table summarises the aquaculture priority technical needs in descending order of the number of PICTs identifying subject areas and specific fields. The number of SPC PICTs that identified these subject areas as priorities are also shown.

Priority technical needs	No. of PICTs
1. Subject area ➤ Specific Fields	[n = 15]
1. Technical aquaculture knowledge, training and support: ➤ Pearl seeding, spat collection, improved pearl quality ➤ Commercial sandfish farming ➤ Seed production ➤ Seed importation (milkfish, clams) ➤ Reseeding (clams, trochus) ➤ Promote technical exchange between PICTs ➤ Provision of expertise within PICTs (e.g. French Polynesia) ➤ Capacity building of national aquaculture staff	8
2. Assessing feasibility of new products / species of interest ➤ Ocean cage farming ➤ Spawning and rearing techniques ➤ High-value species ➤ Cost-benefit analyses ➤ Development of viable economic models (e.g. integrated shrimp with sea cucumber) ➤ R&D species with high commercial potential ➤ R&D local and low-cost aquaculture ➤ Aquaponics ➤ Integrated multitrophic aquaculture and shrimp farming	6
3. Community-based aquaculture ➤ Support community-based aquaculture development ➤ Sea grape farming ➤ Local capacity – aquaculture concepts and principles ➤ Enhance skills and capacity in community aquaculture ➤ Transfer of knowledge to communities in management areas	5
4. Production ➤ National hatchery facility ➤ Maximise hatchery production ➤ Establish feed mill ➤ Increase access to seed stock ➤ Import of quality broodstock	5

Priority technical needs	No. of PICTs
1. Subject area ➤ Specific Fields	[n = 15]
5. Aquatic biosecurity ➤ Hatchery parasite management ➤ Aquatic disease alert system ➤ Standardised methods ➤ National priorities ➤ Water quality ➤ Risk assessment for introduced species	3
6. Market access ➤ Local and export market access and trade opportunity	3
7. Support good governance ➤ Aquaculture strategy and commodity development plan ➤ Regulation for new sectors (sea ranching, zoning) ➤ Reviews of policies and legislations	3
8. Aquaculture business training ➤ Risk assessments and business planning ➤ Marketing ➤ Government; private; community	3
9. Support aquaculture associations or organisations ➤ Micronesia Association for Sustainable Aquaculture	2
10. Communications and awareness ➤ Aquaculture guidelines ➤ Publish and share aquaculture management and development plan with stakeholders	2
11. Environmental sustainability ➤ Environmental impact assessment and monitoring of farms	1
12. Robust data for management ➤ Development of database ➤ Improve data collection	1

Aquaculture technical issues and challenges

10. The following table summarises the identified aquaculture technical issues and challenges. The number of SPC PICTs that identified similar issues or challenges are also shown in descending order.

Technical issues and challenges	No. of PICTs
	[n = 15]
<ul style="list-style-type: none"> • Capacity and technical skills constraints <ul style="list-style-type: none"> ○ Limited capacity for priority species ○ Lack of properly trained and skilled technicians 	8
<ul style="list-style-type: none"> • Availability of farm inputs (feed, seed, broodstock, capital, equipment) <ul style="list-style-type: none"> ○ low hatchery seed production ○ shortage of quality feed ○ suitable feed to be manufactured locally ○ Access to finance for small holder farmers limited ○ Absence of good quality broodstock 	7

Technical issues and challenges	No. of PICTs
	[n = 15]
<ul style="list-style-type: none"> • Infrastructure for aquaculture <ul style="list-style-type: none"> ○ Lack of space/land area ○ Limited inter-island transportation and communication ○ Hatchery and quarantine facilities ○ Access to affordable technology ○ Logistical challenges and shipment of equipment 	6
<ul style="list-style-type: none"> • Limited policies and regulatory framework <ul style="list-style-type: none"> ○ Lack of framework to address import on fisheries ○ Aquaculture governance (policy and regulation) ○ Lack of legal clarity on marine development for aquaculture 	4
<ul style="list-style-type: none"> • Feasibility assessment <ul style="list-style-type: none"> ○ Economic viability to improve cost benefit analysis of projects ○ Need for socio-economic assessment of new artisanal aquaculture developed ○ Lack of potential species for trial 	3
<ul style="list-style-type: none"> • COVID impacts <ul style="list-style-type: none"> ○ Foreign technicians/experts not able to come into the country ○ Affected development of legal framework for aquaculture 	2
<ul style="list-style-type: none"> • Lack of data for management purposes <ul style="list-style-type: none"> ○ Weak data collection for monitoring 	2
<ul style="list-style-type: none"> • Biosecurity <ul style="list-style-type: none"> ○ Animal welfare (validation of stress tests of hatchery products – fry, post larvae) ○ Use of antibiotics vs probiotics in shrimp hatchery ○ Inability to import biological materials 	2
<ul style="list-style-type: none"> • Market access <ul style="list-style-type: none"> ○ Difficulty in accessing export market e.g. seaweed, clams and new species ○ Advice on benchmark prices 	2
<ul style="list-style-type: none"> • Extension support and awareness <ul style="list-style-type: none"> ○ Poor cooperation from communities to support small scale aquaculture 	1
<ul style="list-style-type: none"> • Environmental consideration <ul style="list-style-type: none"> ○ Cultured species considered invasive (e.g. tilapia) 	1
<ul style="list-style-type: none"> • Farm husbandry and management <ul style="list-style-type: none"> ○ Development problem in nursery phase of marine finfish ○ Hatchery management issues (e.g. shrimp hatchery) 	1