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Tanjung Pasir fishing community, Pepela, Rote Island, NTT (Photo: N. Stacey).

Top: **(L & M)** Women tuna trader, Pepela village, rote Island, NTT; (**R)** Women seaweed farmers, Nemberala Village, Rote island, NTT (Photo: N. Stacey). **Middle**: **(L)** Seller, fish market Wanci Island, SE Sulawesi; **(R)** Shark fishers measure shovel nose ray (off Cerum, image Vanessa Jaiteh). **Bottome**: **(L)** Reef gleaning; R Reef gleaning; **(R)**Value added fish products, Mola village, wanci island, Sulawesi (Photo: N. Stacey).

Contents

Acronyms and Abbreviations

ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
AIPD	The Australian Indonesian Partnership for Decentralisation
ALP	alternative livelihood programme
ANCORS	Australian National Centre for Ocena Resources and Security
ANU	Australian National University
AusAID	Australian Agency for International Development
BPS	Central Bureau of Statistics (*Biro Pusat Statistik*)
CDU	Charles Darwin University, Northern Territory, Australia
COREMAP	Coral Reef Management and Rehabilitation Program
CFF	Coral Reef, Fisheries and Food Security
CTC	Coral Triangle Centre
CTI	Coral Triangle Initiative
DFAT	Australian Department of Foreign Affairs and Trade
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
GAF	Gender Aquaculture and Fisheries Network
GEF	Global Enfironment Facility (Indonesia)
GOV	Government of Indonesia or Australia lead or fundeed projects
HLPE	High Level Panel of Experts
IFAD	International Fund for Agricultural Development
IIFET	International Institute for Fisheries Economics and Trade
INT	International Agency lead or funded projects
JED	The Wisnu instigated Community based Eco-Tourism network
KKP	Kementerian Kelautan dan Perikanan (Indonesia Ministry of Marine Affairs and Fisheries)
km	kilometre
LINI	Indonesia Nature Foundation
LMMA	Locally Managed Marine Areas
LSM	Lembaga swadaya masyarakat (Non-government organisation)
MMAF	Ministry of Maritime Affairs and Fisheries
MPA	marine protected area(s)
NRM	natural resources management
NGO	Non-Government Organisations
NR	Natural resourse
NTT	Nusa Tenggara Timur
PES	Payment for Ecosystem/Environmental Services

RCL	Restoring coastal livelihoods
RFLP	Regional Fisheries Livelihoods Programme
SLA	Sustainable Livelihoods Approach
SLF	Sustainable Livelihoods Framework
SSF	Small-scale fisheries
SSF Guidelines	Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries
TNC	The Nature Conservancy (Indonesia)
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WCS	Wildlife Conservation Society (Indonesia)
WWF	Worl Wildlife Fund for Nature (Non-Governement Agency)

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1. Acknowledgments

We thank Gede Astana and JED for making the logistic arrangements for Workshops 1 (Bali) and 3 (Lombok). We thank Dr Dirk Steenbergen and the Research Institute of Environments and Livelihoods (RIEL) at Charles Darwin University for hosting Workshop 2 in Darwin and the opportunity to participate in the RIEL Symposium on coastal livelihoods in the Arafura and Timor Seas prior to this workshop.

2. Executive summary

The overall aims of this project were to review information and methodologies for evaluating the contribution of small-scale fisheries and aquaculture (SSF) to household livelihoods in coastal communities of Indonesia and to review the roles of women in SSF. It has investigated cases where attempts have been made to enhance the livelihoods of SSF communities by strengthening or diversifying existing livelihoods or introducing alternative ones. The effectiveness of initiatives to enhance SSF livelihoods and their impact on women were evaluated.

The approach to the research was to complete an extensive literature review and evaluate the findings from 20 past studies (published and unpublished literature and livelihood project reports) in coastal communities to:

Develop an understanding of the significance of SSF in Indonesia and women's roles in these fisheries;

Describe success factors in developing enhanced coastal livelihoods of SSF communities through mechanisms to strengthen, diversify or find alternative livelihood options;

Identify lessons from examples where attempts have been made to strengthen, diversify or develop alternative livelihoods for small-scale fishing communities in Indonesia and

Document knowledge gaps and future research needs.

The 20 case studies covered a range of government (e.g. European Union, Indonesian and Australian) and non-government initiatives. The study was completed through desk-top studies and three workshops to document, discuss and progress our findings. The first workshop was held on Bali and involved site visits to three main locations: Perancak on the north-west coast where commercial sardine fishing, SSF and turtle conservation are practised; Lovina where dolphin tourism and SSF operate; and Les where LINI, a non-government organisation is working with local communities to develop potential aquaculture of aquarium fish and artificial reefs for a possible dive trail. The second workshop was in Darwin, immediately following the symposium on "Contemporary Perspectives on Coastal Livelihoods in the Arafura and Timor Seas regions" at Charles Darwin University (May 2016) and the third workshop was held on Lombok (November 2016), focussing on a working group analysis and evaluation of the 20 livelihood projects implemented in Indonesia over the last two decades. A selection of six of the presentations from the Symposium in Darwin, four involving participants from this ACIAR project, have been published in a 'Special Features' section of the journal *Marine Policy*, volume 82.

The literature review was revealing and highlighted that few data are gathered by government or researchers that allow the gender roles and the contribution of women's fishing to household livelihood outcomes and wellbeing to be investigated. It also provided the focus and direction for developing a template to summarise livelihood projects implemented in Indonesia to readily make comparisons across studies in the evaluation carried out during the third project workshop. This helped highlight common findings and effectively identify research gaps. These projects covered a wide suite of livelihood diversification initiatives, geographic scales and different types and levels of funding, ranging from small-scale in local communities facilitated by local (e.g. Communities and Fisheries of Indonesia (Masyarakat Dan Perikanan Indonesia – MDPI), Indonesia Locally Managed Marine Areas Program) and international NGOs (e.g., Oxfam, Conservation International, The Nature Conservancy), Indonesian government and other governments through aid programs (e.g. AusAID/DFAT) to large, regional initiatives such as those implemented by aid organisations including the FAO, the World Bank, UNDP, IFAD, and Asian Development Bank.

Following the literature review and the evaluation of 20 current and past projects in Indonesia, we identified several recommendations for further research, capacity building and livelihood development to support small-scale fisheries, gender and coastal livelihoods in Indonesia. These recommendations are summarised under General Recommendations for SSF, Recommendations Specific to Gender and SSF and those emerging from the Themes and Issues identified from evaluating the 20 projects.

Small-scale Fisheries - General Recommendations

Adapt a Sustainable Livelihoods Approach (SLA)[1] for assessing, analysing and evaluating coastal livelihoods (building on the Sustainable Coastal Livelihood Framework – IMM Ltd 2008) to provide a model for understanding of livelihoods and their context and to measure, monitor and evaluate livelihood interventions, their viability and risks (In English and Bahasa Indonesian).

Develop bilingual supporting training and research tools to undertake Sustainable Livelihoods Analyses and Gendered analyses in the Indonesian SSF sector. (as identified under the ACIAR – Australia Indonesia Strategic Plan in Fisheries (2015-2025) including gender research and engagement with women in management and policy development.[2]

Test and apply these tools to a selection of case studies of small-scale fisheries (identifying the most vulnerable marine resource dependant small-scale fisher populations) in Indonesia. Develop this research through discussions and collaborations with communities, Government, University and NGOs agencies involved in fisheries management and livelihood policy development.

Identify interventions in case studies to promote sustainable coastal livelihoods and identify entry points, i.e. aspects of livelihoods within the SLA, where interventions can best be implemented (e.g. relating to assets, gender, vulnerabilities, policies, etc.) with case studies.

- Identify fisheries and natural resource management opportunities to support livelihood diversity.
- Apply a coastal field school and learning centre approach (similar to the Fish Farmer Field School used with small-scale shrimp producers in Sulawesi and Locally Managed Marine Areas programs) to support livelihood diversification programs (see Appendix case studies #13 and #14) and their dissemination to other SSF communities.

Undertake new empirical, action/applied research on livelihood diversification to assess impacts and generate empirical evidence for success factors leading to reduced pressures on marine resources.

- Early and effective community participation in programme design and implementation as well as post-project support is crucial.
- Apply meaningful participatory action research based on SLA principles by putting science at the disposal of local communities and actively involving fishers and resource user groups in the research. This includes involvement in defining the research required to assess assets and the potential for sustainable resource use.

Small-scale Fisheries - Gender specific recommendations:

Undertake grounded research studies to explore the social structures and power relations resulting in the gender differentiated access to, and control over, livelihood assets. This has important implications that affect the ability of men and women to participate in governance and policy, achieve social-ecological resilience to change in global processes and the environment and livelihood sustainability. The proposed research should:

- Estimate women's participation in Indonesian fisheries and their contribution to the economy and food security through direct participation in, and indirect support of, SSF.
- Quantify the catches and value-adding activities of women in SSF communities,
- Provide information on the access to and use of fisheries resources by women to be included in estimating the total level of human pressure on marine ecosystems and species.

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[1] The Sustainable Livelihoods Approach (SLA) combines a conceptual framework (The Sustainable Livelihoods Framework (SLF) with a set of operational principles to provide guidance on policy formulation and development practice (Allison and Horemans 2006).

[2] *P4KSI and ACIAR (Centre for Fisheries Research and Development, Indonesia, and Australian Centre for International Agricultural Research) 2015. Strategic plan for ACIAR engagement in capture fisheries research and capacity development in Indonesia, 2015–25. ACIAR Technical Report No. 88. ACIAR: Canberra. 28 pp.*

- Collect data on women's ecological knowledge of fisheries, an untapped resource in data poor fisheries management systems.
- Investigate ways to increase women's decision-making capacity in SSF for improved fisheries management and policy. This will improve the equity of women in the allocation of resources and decision-making around those resources.

Collaborative gender research - An important source for gender and fisheries research is that promoted through the Gender in Aquaculture and Fisheries Network (GAF) and formal Gender in Aquaculture and Fisheries section established under the Asian Fisheries' Society [3]. This network should be supported and promoted in Indonesia as a community of practice and source of resources to promote gender and fisheries research. It also provides a network for discussions and potential collaborations among scientists, academics, technicians, fisheries officers, and Government and NGO workers to facilitate research activity, sharing of information and publication of results[4].

Recommendations from case-study evaluation and emerging cross-cutting themes and issues

Trade-offs between Livelihoods and Sustainability - A thorough review of the long-term project impacts, using the Sustainable Livelihood Approach, needs to be conducted to evaluate both sustainability and livelihood improvement to establish long-term policy and best practice outcomes for both environmental sustainability and social equity. Balancing livelihood and environmental sustainability outcomes require extended post-project monitoring and ongoing engagement. Attention must also be given to policy changes and the visibility of outcomes if a virtuous cycle between existing policy, project outcome analysis and revised policy and programming is to emerge.

Governance – Establishing meaningful processes for ensuring local participation and the congruence of policy goals and principles across spatial scales and levels of government, is an urgent governance concern. To this end, attention to both local customary and state legal regimes, as these relate to property and resource rights, requires comprehensive assessment. Ensuring the articulation of government policy and local practice in all stages of project interventions – from design through monitoring and enforcement - is essential for effective programs, as is establishing best-practice mechanisms for local participation in planning, data gathering, decision-making, implementation and monitoring (see also Pomeroy et al., 2017).

Conflicted Role of Markets - Future research and assistance programs must integrate marketing development with regulatory regimes if genuinely sustainable livelihood improvements are to be achieved through product enhancement, diversification, knowledge and infrastructure upgrading. With respect to SSF access to certification schemes that attempt to draw together livelihood benefits and resource governance, interventions are required to deal with the heavy transaction costs involved.

Cross-sectoral collaboration and institutional *bricolage* ***(a construction achieved by whatever comes to hand)*** **-** Participatory and adaptive co-management approaches must be introduced from the outset to engage communities, build trust and adapt project objectives to sustainable coastal development and community based natural resource management goals. Projects need to establish an effective *bricolage* approach to relations between levels of government and other sources of influence on fisheries and communities in the project area. This includes: the collaborative engagement of experienced NGO facilitators and extension officers with ongoing commitment to local communities and experience in dispute management, capacity building, marketing and data collection, as well as academic researchers with long-term action research agendas. The ability to

[3] http://genderaquafish.org/

[4] http://genderaquafish.org/2017/02/03/join-gafs/

collaborate across government, NGO and local community sectors is another important pivot in the *bricolage* scenario that deserves attention and support in the policy agenda setting and resourcing.

Lessons learned

Enhance the research planning and design phases of projects by considering the following:

- Longer project cycles are required to invest in relationships and increase sustainability of livelihood and environmental outcomes,
- Selecting case/situation that will have a high chance of success, based on strong enabling conditions,
- Develop and plan post-project support mechanisms for strengthening, diversifying and embedding alternative livelihoods and enhancing community institutions.
- Establish greater integration between livelihood strategies and desired resource management outcomes (i.e. sustainable management) to reduce the potentially conflicting outcomes from enhanced livelihoods and declines in natural resources.

2. Ringkasan Eksekutif

Tujuan dari proyek ini adalah untuk mengkaji informasi dan metodologi dalam mengevaluasi kontribusi perikanan dan budidaya skala kecil terhadap sumberpenghidupan masyarakat pesisir di Indonesia serta melihat peran perempuan dalam perikanan skala kecil. Proyek ini melakukan investigasi atas beberapa upaya yang telah dilakukan untuk meningkatkan penghidupan masyarakat perikanan skala kecil melalui penguatan atau diversifikasi sumber pengidupan atau pengenalan sumberpenghidupan alternatif. Proyek ini mengevaluasi efektifitas berbagai inisiatif dalam meningkatkan sumberpenghidupan perikanan skala kecil dan dampak inisiatif-inisiatif tersebut terhadap perempuan.

Pendekatan dari penelitian ini melalui kajian berbagai literatur dan evaluasi atas 20 studi kasus yang telah dilakukan (baik literatur yang dipublikasikan ataupun tidak dan laporan dari berbagai proyek pengembangan sumberpenghidupan masyarakat pesisir), untuk:

1) meningkatkan pemahaman tentang pentingnya perikanan skala kecil di Indonesia dan peran perempuan di sektor perikanan,
2) menggambarkan faktor-faktor kunci yang mempengaruhi kesuksesan dalam peningkatan sumberpenghidupan masyarakat pesisir melalui mekanisme peningkatan, diversifikasi dan pengembangan pilihan sumberpenghidupan yang baru,
3) mengidentifikasi proses pembelajaran dari berbagai upaya yang telah dilakukan untuk penguatan, diversifikasi atau pengembangan sumberpenghidupan yang baru bagi masyarakat perikanan skala kecil di Indonesia; dan
4) Mendokumentasikan kesenjangan ilmu pengetahuan dan kebutuhan penelitian di masa depan.

Duapuluh (20) kasus yang dibahas di sini mencakup inisiatif pemerintah (misalnya Uni Eropa, Indonesia, ~~dan~~ Australia) dan non pemerintah. Kajian ini dilakukan melalui studi literatur dan tiga buah workshop yang dilaksanakan untuk mendokumentasikan, mendiskusikan dan merumuskan hasil-hasil kajian. Workshop pertama dilaksanakan di Bali. Pada workshop pertama kunjungan ke lapangan juga dilakukan yaitu ke (a) Perancak di Bali Utara sebagai lokasi penangkapan ikan sardin, perikanan skala kecil dan lokasi konservasi penyu; (b) Lovina tempat wisata lumba-lumba dan perikanan skala kecil; dan (c) Les, tempat organisasi non pemerintah LINI mengembangkan budidaya ikan hias dan karang buatan untuk pengembangan lokasi wisata selam. Workshop kedua dilaksanakan di Darwin, yang dilaksanakan setelah symposium "*Contemporary Perspectives on Coastal Livelihoods in the Arafura and Timor Seas regions*" di kampus Charles Darwin University pada bulan Mei 2016. Workshop ketiga dilaksanakan di Lombok pada bulan November 2016, dengan fokus pada analisa dan evaluasi dari 20 proyek sumberpenghidupan yang diimplementasikan di Indonesia selama dua dekade. Enam buah tulisan dari presentasi di symposium di Darwin, empat orang dari peserta proyek ACIAR ini telah ikut mempublikasikan hasil tulisannya pada edisi khusus Jurnal *Marine Policy*, volume 82.

Kajian literatur menunjukkan dan menggarisbawahi sedikitnya data yang dikumpulkan oleh pemerintah maupun peneliti unntuk keperluan telaahan tentang peran Gender dan kontribusi nelayan perempuan atas sumberpenghidupan dan kesejahteraan keluarga. Kajian literatur ini juga memberikan focus dan arah untuk membuat format ringkasan informasi (dalam bentuk tabel) bagi program-program sumberpenghidupan di Indonesia. Adanya format yang baku dari ringkasan informasi projek ini telah memungkinan dilakukannya studi komparasi lintas projek yang dilakukan pada workshop ketiga. Proses ini membantu untuk mengidentifikasi secara efektif temuan-temuan umum dan menemukan hal-hal yang belum dilakukan dalam penelitian sebelumnya. Proyek-proyek yang dievaluasi meliputi berbagai macam inisiatif pengembangan diversifikasi sumberpenghidupan, di implementasikan di berbagai wilayah

geografis dan skala pembiayaan yang berbeda-beda. Untuk yang terakhir ini, skala kegiatan mulai dari inisiatif skala kecil pada komunitas lokal dengan difasilitasi LSM nasional seperti Masyarakat Perikanan Indonesia (MDPI), Indonesia Locally Managed Marine Area (ILMMA), inisatif yang difasilitasi LSM Internasional (Misalnya Oxfam, Conservation International, The Nature Conservancy), Pemerintah Indonesia dan pemerintah luar negeri melalui bantuan pendanaan (misalnya AusAID/DFAT dan USAID/CRMP), sampai dengan proyek skala besar yang dilaksanakan oleh organisasi seperti FAO, the World Bank, UNDP, IFAD, and Asian Development Bank.

Kajian literatur dan evaluasi dari 20 proyek sumberpenghidupan di Indonesia ini menjadi bahan untuk memberikan beberapa rekomendasi yang meliputi rekomendasi untuk penelitian, peningkatan kapasitas dan pengembangan proyek sumberpenghidupan masyarakat pesisir yang bisa mendukung peningkatan perikanan skala kecil, dan keseimbangan Gender dimasa datang. Rekomendasi ini dirangkum pada bagian Rekomendasi Umum untuk perikanan skala kecil, Rekomendasi Gender dan perikanan skala kecil dan Rekomendasi lainnya.

Perikanan Skala Kecil - Rekomendasi Umum

1) **Mengadaptasikan pendekatan *SLA (Sustainable Livelihoods Approach)***[5] ketika melakukan penilaian, analisa dan evaluasi inisiatif pengembangan sumberpenghidupan masyarakat pesisir (yang dibangun berdasarkan pendekatan dari *Sustainable Coastal Livelihood Framework – IMM Ltd 2008*) untuk memahami model sumberpenghidupan dan konteksnya serta untuk mengukur, memantau dan mengevaluasi intervensi peningkatan sumberpenghidupan, potensi-potensi yang bisa dikembangkan dan resiko yang mungkin dihadapi. (dalam Bahasa Inggris dan Bahasa Indonesia)
2) **Mengembangkan alat pendukung penelitian dan pelatihan dalam dua Bahasa**, untuk melaksanakan analisa *Sustainable Livelihoods Analyses* dan Gender di sektor perikanan skala kecil di Indonesia. (Seperti yang termaktub dalam Rencana Strategis ACIAR di bidang perikanan 2015-2025) termasuk di dalamnya penelitian tentang Gender dan pelibatan perempuan dalam pengelolaan dan pengembangan kebijakan[6].
3) **Ujicoba dan menerapkan pendukung tersebut di atas pada beberapa studi kasus perikanan skala kecil** (mengidentifikasi masyarakat perikanan skala kecil yang paling rentan dan paling bergantung pada sumber daya alam laut) di Indonesia. Pengembangan penelitian ini dilakukan melalui diskusi dan kolaborasi dengan berbagai pihak seperti masyarakat, universitas dan LSM yang terlibat dalam pengelolaan dan pengembangan kebijakan di bidang perikanan.
4) **Identifikasi intervensi** yang bisa dilakukan pada studi-studi kasus itu untuk mempromosikan sumberpenghidupan yang berkelanjutan dan mengidentifikasi pintu masuk, misalnya melihat aspek-aspek sumberpenghidupan masyarakat melalui pendekatan *SLA*, dengan memilih intervensi terbaik yang bisa dilakukan (misalnya terkait aset, gender, kerentanan, kebijakan, dll):

[5] *The Sustainable Livelihoods Approach (SLA) menggabungkan kerangka konsep (The Sustainable Livelihoods Framework (SLF)) dengan prinsip-prinsip praktis untuk memberikan panduan bagi pengembangan kebijakan dan petunjuk teknis (Allison and Horemans 2006).*

[6] *P4KSI and ACIAR (Centre for Fisheries Research and Development, Indonesia, and Australian Centre for International Agricultural Research) 2015. Strategic plan for ACIAR engagement in capture fisheries research and capacity development in Indonesia, 2015–25. ACIAR Technical Report No. 88. ACIAR: Canberra. 28 pp.*

- mengidentifikasi peluang-peluang pengelolaan perikanan dan sumber daya alam yang mampu mendukung pengembangan diversifikasi sumberpenghidupan masyarakat
- Melaksanakan pendekatan sekolah lapang dan pusat pelatihan (sama seperti sekolah lapang untuk petani tambak udang di Sulawesi dan Pengelolaan wilayah koservasi secara lokal atau LMMA) untuk mendukung program diversifikasi sumberpenghidupan masyarakat (lihat lampiran studi kasus 13 dan 14) dan penyebarluasan informasi ini ke masyarakat perikanan skala kecil lainnya.

5) **Melakukan penelitian terapan dan empiris** untuk diversifikasi sumberpenghidupan masyarakat untuk meninjau dampak dan mengidentifikasi faktor-faktor kunci kesuksesan yang bisa mengurangi tekanan atas sumberdaya alam laut.
   - Pentingnya partisipasi masyarakat sejak awal program mulai dari tahapan perencanaan dan implementasi serta pasca pelaksanaan proyek.
   - Pentingnya melaksanakan penelitian secara partisipatif berdasarkan pendekatan prinsip-prinsip *SLA* dengan mengintegrasikan ilmu pengetahuan ke dalam ilmu yang ada di masyarakat dan secara aktif melibatkan nelayan dan pengguna sumberdaya alam dalam penelitian. Hal lainnya yang perlu diintegrasikan dalam perumusan penelitian adalah akses atas aset dan potensi pemanfaatan sumber daya alam secara berkelanjutan.

Perikanan Skala Kecil - Rekomendasi untuk Keseimbangan Gender

6) **Melaksanakan penelitian yang mendasar** untuk mengkaji struktur sosial dan hubungan kekuasaan yang menyebabkan perbedaan berbasiskan gender, dalam mengakses dan penguasaan atas aset sumberpenghidupan. Hal ini juga mempengaruhi bagaimana laki-laki dan perempuan berpartisipasi dalam tata kelola dan perumusan kebijakan, upaya untuk beradaptasi secara social dan ekologi dalam menghadapi proses global dan keberlanjutan lingkungan dan sumberpenghidupan. Penelitian dimasa depan haruslah:
   - Memperkirakan partisipasi perempuan di sektor perikanan di Indonesia dan kontribusinya pada ekonomi dan ketahanan pangan keluarga melalui partisipasi langsung dan tidak langsung dalam perikanan skala kecil
   - Menghitung tangkapan ikan dan nilai tambah dari setiap kegiatan perempuan di sektor perikanan skala kecil
   - Memasukkan informasi atas akses dan pemanfaatan sumberdaya perikanan oleh kelompok perempuan ke dalam perhitungan total jumlah tekanan manusia atas species dan eksosistem
   - Mengumpulkan pengetahuan dari kelompok perempuan tentang ekologi perikanan, sebuah sumber data yang tak terpakai (padahal penting) pada system pengelolaan perikanan dengan data terbatas (*data poor management*)
   - Menginvestigasi cara untuk meningkatkan kemampuan kelompok perempuan dalam keikutsertaan proses pengambilan keputusan di perikanan skala kecil untuk meningkatkan pengelolaan dan pengembangan kebijakan perikanan. Ini juga bisa meningkatkan keadilan bagi kelompok perempuan untuk mendapatkan alokasi sumberdaya dan proses pengambilan keputusan dari sumberdaya tersebut.

7) **Penelitian tentang Gender Kolaboratif** – Sumber penelitian yang penting tentang gender dan perikanan adalah mempromosikan melalui jaringan *Gender in Aquaculture*

and Fisheries Network (GAF) dan bagian gender dari bidang Budidaya dan Perikanan dari *Asian Fisheries' Society*[7]. Jaringan ini harus didukung dan dipromosikan di Indonesia sebagai jaringan masyarakat pelaku dan sumber pengetahuan dan merupakan tempat untuk mempromosikan penelitian tentang gender dan perikanan. Jaringan ini merupakan wadah diskusi dan potensi kolaborasi dari berbagai ilmuan, akademisi, teknisi, staf perikanan, pemerintah dan anggota LSM untuk memfasilitasi kegiatan penelitian, berbagi informasi dan publikasi hasil-hasil penelitian[8].

Rekomendasi dari evaluasi studi kasus dan Issu-issu Penting

8) ***Trade-offs between Livelihoods and Sustainability*** **–** telaahan tentang dampak jangka panjang dari berbagai proyek, dengan menggunakan pendekatan *SLA*, perlu dilaksanakan untuk mengevaluasi keberlanjutan dan peningkatan sumberpenghidupan masyarakat untuk memberikan masukan pada pengembangan kebijakan jangka panjang dan memberikan hasil yang berkelanjutan dan berkeadilan sosial. Menyeimbangkan antara kepentingan ekonomi dari sumberpenghidupan masyarakat dan lingkungan memerlukan pemantauan paska proyek dan keterlibatan secara terus menerus. Perhatian juga harus diberikan pada perubahan kebijakan dan hasil yang bisa terlihat jika ada rentang siklus yang panjang antara kebijakan yang dikembangkan saat ini, analisa hasil proyek serta perubahan kebijakan dan program.

9) **Tata Kelola Kepemerintahan –** Menciptakan proses yang berarti untuk memastikan partisipasi masyarakat lokal dan perumusan tujuan dan prinsip-prinsip kebijakan yang mempertimbangkan skala ruang dan berbagai tingkatan pemerintah. Pada tahap ini, perhatian juga harus diberikan pada masyarakat adat, karena ini berkaitan atas hak kepemilikan sumberdaya, memerlukan perhatian yang menyeluruh. Memastikan kebijakan pemerintah dan praktek lokal ikut dipertimbangkan dalam semua tahapan intervensi, mulai dari tahapan perencanaan sampai dengan pengawasannya – penting untuk efektifitas program – dirumuskan berdasarkan partisipasi lokal dalam perencanaan, pengumpulan data, proses pengambilan keputusan, pelaksanaan dan pemantauan (lihat Pomeroy et al 2017)

10) **Konflik dari Peran Pasar –** Penelitian di masa datang dan program bantuan harus mengintegrasikan peran pasar dan pengembangan kebijakan jika peningkatan sumberpenghidupan masyarakat ingin dicapai melalui peningkatan kualitas, diversifikasi, dan pengetahuan produk serta peningkatan infrastruktur. Merujuk pada proses sertifikasi perikanan skala kecil yang berusaha menggabungkan antara pemanfaatan untuk sumberpenghidupan dan tata kelola, intervensi memerlukan biaya yang cukup besar.

11) **Kolaborasi dari berbagai sektor** (konstruksi yang bisa dicapai melalui berbagai cara) – Pendekatan partisipatif dan adaptif pengelolaan kolaborasi harus dikenalkan dari sejak tahap pelibatan masyarakat, membangun kepercayaan dan mengadaptasikan tujuan proyek untuk pengembangan wilayah pesisir yang berkelanjutan dan pengelolaan perikanan yang berbasiskan masyarakat. Proyek haruslah merumuskan pendekatan yang dibangun dari berbagai sektor secara efektif untuk segala tingkatan pemerintah dan berbagai pihak yang berkepentingan atas perikanan dan masyarakat

[7] http://genderaquafish.org/

[8] http://genderaquafish.org/2017/02/03/join-gafs/

di berbagai lokasi. Termasuk di dalamnya yaitu kolaborasi dengan fasilitator dari berbagai LSM yang berpengalaman dan petugas penyuluh lapangan yang berkomitmen secara terus menerus untuk membantu masyarakat lokal dan berpengalaman dalam pengelolaan konflik, peningkatan kapasitas, pemasaran dan pengumpulan data serta para peneliti dengan agenda penelitian yang berjangka panjang. Kemampuan untuk berkolaborasi dengan berbagai sector di pemerintah dan masyarakat local adalah faktor penting dalam membangun kerjasama dari berbagai pihak yang perlu mendapat perhatian dan dukungan dari kebijakan.

12) Pembelajaran:

Memperkuat rencana dan tahapan perencanaan dari berbagai proyek dengan mempertimbangkan:

- Siklus proyek yang lebih panjang perlu untuk diinvestasikan dalam rangka membangun hubungan dan meningkatkan keberlanjutan sumberpenghidupan masyarakat dan lingkungan
- Memilih studi kasus atau lokasi di mana kemungkinan keberhasilan intervensi besar, berdasarkan kondisi yang memungkinkan
- Mengembangkan dan merencanakan mekanisme paska proyek untuk memperkuat, mendiversifikasikan dan menstrukturkan intervensi pengembangan alternatif sumberpenghidupan masyarakat
- Merumuskan integrasi yang lebih kuat antara strategi pengembangan sumberpenghidupan dan pengelolaan sumber daya alam (pengelolaan yang berkelanjutan) untuk mengurangi potensi konflik dari peningkatan sumberpenghidupan masyarakat dengan menurunnya daya dukung sumberdaya alam.

3. Background

Sustaining current fisheries and marine-based livelihoods, and developing new activities outside traditional or established livelihoods in remote coastal populations poses significant social, economic and cultural challenges. Although many attempts have been made to develop new livelihoods for coastal communities, the documentation of these initiatives, particularly their successes and failures is, in general, poor. One reason that many projects have failed is due to a poor understanding of the needs, aspirations, capacities and goals of target communities by those implementing development projects (Sayer and Campbell, 2004; Pomeroy et al., 2017). Some pilot programs (e.g., by locally based NGOs and government, bilateral aid programs, international programs and large international NGOs) have been assessed as successful, which offers the potential for replication in other areas. Nonetheless, the concept of 'success' must be qualified in the absence of a broader and longer-term framework for evaluation. In most cases, 'success' can only be regarded as qualified 'improvement' in specified project components. Livelihood diversification may also result in some unforeseen consequences, such as the collapse of seaweed cultivation due to disease outbreaks. Nature-based tourism is often seen as a panacea for increasing incomes and the sustainability of marine resources. Yet, the growth of this activity has been difficult to control and, in some cases, may threaten the sustainability of the target sites and populations for tourism. Nonetheless, most SSF related livelihood studies have recognised the benefits of diversification as a means of achieving increased income and livelihood security (Brugere et al., 2008).

This project reviewed and evaluated SSF, including small-scale aquaculture, and their contributions to livelihoods and identified studies where attempts have been made to enhance livelihoods by strengthening, diversifying or finding alternative livelihoods. Twenty case study projects were selected in Indonesia for further analysis of livelihood improvements and lessons learned. This synthesis of available knowledge and analysis of different research findings and initiatives was used to identify common factors for enhancing livelihoods successfully, as a basis for more applied, action-driven research in Indonesia.

Research on understanding the social and economic value of SSF, gender and the roles of women in fisheries and their contribution to livelihoods and food security, has been identified as high priority areas by the Indonesian and Australian governments. The Indonesian government's three pillars for the Ministry of Marine Affairs and Fisheries are Sovereignty, Sustainability and People's welfare and this research directly addresses the latter two of these priorities by examining the interactions between SSF livelihoods, the sustainability of the resources they are based on and the welfare of the communities that rely upon these livelihoods and resources. This project also aligns with the third Indonesian National Mid-term Development Plan (2015-2019), which aims to strengthen food security and increase economic competitiveness based on natural resources, human resources and science and technology, as well as fisheries management. Research on livelihoods and gender is also identified in the 10-year plan for the ACIAR Fisheries Program in Indonesia (FIS/2011/030, P4KSI and ACIAR 2015). This plan recognised that women had limited involvement in fisheries management and policy development and identified capacity building as a priority for addressing these gaps. The aims of the research also align strongly with the Department of Foreign Affairs and Trade's (DFAT 2014) policy on foreign aid, particularly reducing poverty (Key Target 3) and empowering women and girls (Key Target 4).

4. Objectives

The overall aims of this project were to: 1) review information and methodologies for evaluating the contribution of small-scale fisheries (SSF) and aquaculture to household livelihoods in coastal communities of Indonesia and 2) review the roles of women in SSF. This project also evaluated cases where attempts have been made to enhance the livelihoods of these communities and reviewed evidence of their effectiveness in enhancing livelihoods and the roles of women.

The project had four main objectives:

Develop an understanding of the significance of SSF in Indonesia and women's roles in these fisheries,

Describe factors which contribute to livelihood improvement in resource dependant coastal livelihoods,

Identify opportunities where sustainable livelihoods may be strengthened, diversified or alternatives developed, and

Document knowledge gaps and future research needs.

The study collated and evaluated research findings from several past livelihood development and fisheries studies in coastal communities.

During the project, we modified the original project objectives for 2) and 3), based on our workshop discussions and literature review to consider the importance of defining and identifying success factors. We discuss 'measures of success' in different ways, for example, the form of livelihood improvement approaches, lessons learned, enabling factors and constraints identified from the literature. For the component of this project focussing on evaluation of livelihood projects, success was evaluated based on livelihood measures of improvement/achievement in relation to five asset types (i.e. human, social, physical, natural and financial capital) and five sustainable livelihood outcomes (more income, increased wellbeing, reduced vulnerability, improved food security, and more sustainable use of the natural resource base). Objective 3 was modified to focus more on learnings from best practice than options for livelihood activities, as it became clear from the literature review and workshop discussions that the identification of such options must involve consultation with the livelihood beneficiaries and not just external agents (see also Pomeroy et al., 2017).

The two revised objectives for the proposal are:

Describe success factors in developing enhanced coastal livelihoods of SSF communities through mechanisms to strengthen, diversify or find alternative livelihoods; and

Identify lessons from examples where attempts have been made to strengthen, diversify or develop alternative livelihoods for SSF communities in Indonesia.

5. Methodology

This project involved collaboration between Australian and Indonesian researchers to conduct a thorough desktop analysis of the literature, and analysis of livelihood project case studies to better understand the contribution of SSF and aquaculture to the livelihoods of coastal communities and identify measures which contribute to improvement in resource dependent coastal livelihoods.

The research methodology applied mixed methods, using both qualitative and quantitative approaches, to address the research objectives. We loosely followed the Sustainable Livelihoods Approach Conceptual Framework (DFID 1999) to guide our coverage of issues in the literature review, preparation of case study templates (see Appendix 11.1.1) and evaluation of 20 livelihood projects (Appendix 11.1.2). We also applied consideration of a gender approach in the review and evaluation of projects and identification of lessons learned from projects.

The approach and methods were developed initially by the project leaders and refined and finalised during the project workshops in February, May and November of 2016 (See Appendix 11.2 for the Agendas and participants in these workshops).

5.1 Literature Review

The approach to the project and status, structure and content of the literature review were discussed in the first workshop, held in Bali from February 8 to 12, 2016 (see Appendix 11.2.1).

The desktop literature review (encompassing published material, unpublished reports, and websites) was conducted over the course of the project from late 2015 until early 2017 by Charles Darwin University. The results were prepared in a report and references entered into an Endnote database.

Key questions for guiding the literature review and case study analyses were developed prior to Workshop 1 and were as follows:

- What are the livelihood contributions of fisheries/aquaculture to households?
- What is the role of women in fisheries/aquaculture and livelihood contributions?
- What are the essential components for livelihood improvement or diversification in SSF?
- What are the opportunities for, or constraints to, livelihood improvement or diversification?
- Which approaches to improving livelihoods (strengthening, diversifying, finding alternatives) have been most successful in improving the well-being of these SSF communities?
- Where are the knowledge gaps for livelihood improvement in Indonesian SSF contexts?
- What tools or methods are appropriate for SSF livelihoods studies and evaluations?

The literature review is divided into two Parts, followed by recommendations for further research:

- Part A focusses firstly on the global context of SSF, their characterisation in Indonesia, and their contributions to livelihoods and wellbeing; secondly on gender in SSF, including women's roles and contributions at the household level, and the gendered impacts of SSF vulnerability; thirdly on gender, livelihood development and policy in SSF; and lastly on gender and fisheries research and methods;
- Part B examines approaches to SSF livelihood enhancement (e.g. the Sustainable Livelihoods Approach and Framework) and diversification, including best practices, successes, failures, constraints and opportunities.

An extended summary of the literature review is given in the Key Results, Section 7.1.3 and the full literature review and bibliography of references is provided in Appendix 11.3.

5.2 Method and Scope of Case studies

The following case studies of small-scale fisheries and aquaculture, their contributions to livelihoods and gender roles were presented at the first workshop:

Ecosystem Approaches to Fisheries Management and SSF fishers in Jor Bay, Lombok (Dr Dedi Adhuri),

Improving the value chain of inshore fisheries and seaweed farming in Pantar Island (Dr Ria Fitriani, Associate Professor Natasha Stacey)

Dolphin tourism of Lovina, Bali (Dr Putu Liza Kusuma Mustika – "Icha")

Coastal Field Schools for Sustainable Mangroves – Aquaculture (shrimp and milkfish) in south-east Sulawesi (Ibu Ratna Fadilah)

Two studies in Sumatra:

Livelihoods and poor fishers in West Sumatra (Dr Budy Wiryawan); and

Shrimp aquaculture in Lampung, Sumatra (Dr Budy Wiryawan)

Shark fisheries and livelihoods of eastern Indonesia (Professor Neil Loneragan for Dr Vanessa Jaiteh)

Coastal community conservation issues in Perancak, Bali (Associate Professor Carol Warren)

Culture of aquarium fish and manufacture of artificial reefs in northern Bali (Ms Toni Massey, Australian Volunteer in International Development with LINI at Les, Bali).

A selection of case studies by the participants in our project was summarised in the template developed during the workshop.

The second project workshop was held immediately following the Symposium on coastal livelihoods in the Arafura and Timor Sea (ATS), organised by the Research Institute for Environments and Livelihoods at Charles Darwin University (see Appendix 11.2.2). The ATS Symposium ran from Monday May 16 to May 18, with many participants from this ACIAR project participating in the Symposium, and the 2nd project workshop was on May 19 and 20.

The third project workshop was held on Lombok from November 21 to 24, 2016 and included a site visit to two areas to gain greater understanding of SSF and aquaculture in the area (see Appendix 11.2.3).

We adapted and modified the template developed in Workshop 1 and from IMM Ltd (2008) to summarise each case study of past and current projects (see Appendix 11.1) and to identify the gender dimensions of livelihood enhancement or resource management activities and impacts on assets and livelihood outcomes, learnings and opportunities.

The approach and method for the project case studies involved firstly, a search and information compilation exercise of coastal livelihood projects implemented by local and international NGOs, the Indonesian government, Australian government and other bilateral aid agencies, International development agencies, and UN agencies. Information on the case studies was compiled from grey literature, project documents and evaluation reports and project websites (see list of sources in Appendix 11.1.2) and this was used to complete a summary of the project in a standard template. Initially, templates were completed by researchers at Charles Darwin University. These were reviewed at the 2016 November workshop and a final list of projects were selected for more detailed analysis and comparison.

The criteria for selection of final projects were:

- Coastal livelihood improvements in different areas – aquaculture/mariculture and coastal fisheries, and involving men and or women.
- Representation of types of project activities implemented in Indonesia (e.g. community development, fisheries management, conservation management, capacity building, market based (value chains, etc.), Fish Aggregating Devices (FADs), subsidies).

- Different scale of projects (regional, in which Indonesia is one of a number of countries participating, national, provincial, district, village levels).
- Size of project – in terms of investment (from multi-million dollars to smaller).
- Bilateral and international development programs, large regional initiatives, International NGOs, community-based NGOs and Indonesian government programs. The aim was to capture the scope and breadth of interventions or improvement attempts – from large-scale regional externally funded development agencies programs – which could be regional or single country to bilaterally funded projects, national level government initiatives and international and national or local NGO initiatives, which also range in size and scope.
- The project team's knowledge about projects and ready access to information (which is largely grey literature). In some cases, the ACIAR project contributors were directly engaged in research related to the case studies discussed (Wiryawan #4, Adhuri #8, Brown #13, Steenbergen #14, Warren #20; In one case (Mustika #19) the case study was entirely research based, although the researcher was a former WWF staff member involved in related coastal conservation issues in Bali.
- Location – projects from across the Indonesian archipelago.

During Workshop 3 we developed an Excel workbook to summarise the 20 project attributes with three key areas for comparison: 1) Project characteristics; 2) Evaluation of project results in terms of livelihood assets, livelihood outcomes, whether projects had specific gender/women components or addressed institutional development; fisheries management, and the long term sustainability of the project, and 3) Summary of the lessons learned (including achievements, enabling factors, lessons, challenges and constraints and recommendations). Small groups conducted an evaluation of the projects selected to characterise each project, in terms of livelihood Assets, Outcomes, Sustainability, and Lessons. These projects were selected based on the information that was available to participants (some projects did not have evaluation reports available). For example, several Indonesian government projects were not evaluated due to a lack of information.

A summary list of the 20 projects reviewed is provided in Table 7.6.1 in Section 7 and the completed project templates are provided in Appendix 11.1.2. Other past and ongoing projects we considered for including in our comparative analysis, but did not evaluate due to lack of information, were:

- Public Private Partnerships (Diving Tourism).
- Indonesia Coastal Resources Management Project (Proyek Pesisir) (ended in 2003, USAID).
- Conservation International (Papua).
- RARE Fish for Future.
- Coral Reef Rehabilitation and Management Program (COREMAP) Phase 3 (in development).
- Arafura Timor Seas Ecosystem Action Program (ATSEA) Phase 2: In development GEF/UNDP Indonesia Project Document Feb 2017.
- Australia-Indonesia Partnership for Rural Economic Development Program (AIPD - Australian Government).
- Inka Mina (MMAF).
- Minapolitan Area (MMAF).
- Fishers Livelihood Improvement Program (Peningkatan Kehidupan Nelayan) (MMAF).
- Coastal Farmer Field Schools ongoing (DFAT – Australia Indonesia Institute - implemented by NGO Blue Forests (2015-2017).
- Sustainable Ecosystems Advanced (SEA) Project Indonesia (USAID, 2016 ongoing).

Working in small groups, teams reviewed clusters of projects and conducted an evaluation which is summarised in Section 7.2 below. Some of the limitations of our evaluations were that comparable

information was not available for the 20 projects and that we were not able to verify some of the reported claims made in the evaluation documents (i.e. ground truthing).

During the workshops, defining and identifying success factors developed into an important topic of discussion. We loosely applied the Sustainable Livelihood Framework (DFID 1999) to compare the same criteria of success across all projects namely to assess different categories of assets and measures of livelihood outcomes; our evaluation of the measures of project success concerned evidence of improved livelihood assets and outcomes, the sustainability of the intervention achievements and lessons learned. We have discussed factors contributing to livelihood improvement in different ways throughout the report and our overall findings on lessons learned, enabling factors and constraints, are drawn from the literature review (Section 7.1) and project evaluations (Section 7.2). The lack of long-term follow up on the impact and sustainability of projects is a significant impediment to assessing claims of 'success' for both livelihood improvements and environmental sustainability to work.

6. Achievements against activities and outputs/milestones

The objectives of this small research activity were to:

Develop an understanding of the significance of SSF in Indonesia and women's roles in these fisheries,

Describe success factors in developing enhanced coastal livelihoods of SSF communities through mechanisms to strengthen, diversify or find alternative livelihoods,

Identify lessons from examples where attempts have been made to strengthen, diversify or develop alternative livelihoods for small-scale fishing communities in Indonesia.

Document knowledge gaps and future research needs.

These objectives were addressed through the seven activities in the Table below.

Table 6.1 Summary of project activities, outputs and milestones.

No.	Activity	Outputs/ Milestones	Completion Date	Comments
1	Start-up meeting with partners to develop the detailed study design and the research approach	Meeting report and communication of report to MMAF, NGOs and local stakeholders	Complete February 2016	Completed in email exchange and during Workshop 1. Case studies identified for summarisation in summary template that was developed to facilitate comparative analyses.
2	Workshop (1) - with partners to refine research questions, methodologies, outputs and roles/responsibilities of research partners, and other personnel.	- Presentations - Meeting report, work plans - Draft Table of Contents of final report	Complete, February 2016.	Brief summary meeting report circulated to all participants. People and organisations identified to add to the case studies for comparative analysis (e.g., NGOs). Structure and content of literature review and final report developed and reviewed.
3	Desk top review and analysis of SSF/aquaculture, the role of women and attempts to enhance livelihoods for these communities	Draft report and review to inform selection of case studies for field evaluation	Complete December 2016.	A comprehensive literature review circulated and discussed.
4	Identification of case studies for evaluation	Evaluation methods,	Complete, May 2016.	Initial case studies were developed during Workshops 1, 2 and 3 and 20 studies have been summarised in the template developed during Workshop 1, selected and elaborated during Workshop 2, and evaluated during Workshop 3.
5	Evaluate information from selected case studies and identify best practice approaches/success factors for livelihood improvements	Project summaries and report on livelihood evaluations	Workshop complete December 2016. Evaluation from workshop summarised in Section 7.2 of this report.	See above. Full evaluations compared and discussed at Workshop 3 and results generated.

Table 6.1 continued…

No.	Activity	Outputs/ Milestones	Completion Date	Comments
6	Workshop (2) discussion of projects for evaluations and suitability of the template for providing effective project summaries	Workshop Report (to be communicated to MMAF, NGOs, local stakeholders)	Complete July and November 2016.	Developed with project partners during Workshop 2 and 3 and to be circulated to stakeholders e.g., Agency of Marine and Fisheries Research and Development, Directorate General of Capture Fisheries, Directorate General of Aquaculture. Workshop 2 delayed from November 2015 to May 2016 because of disruption of travel through eruption of Mt. Rinjani. Workshop 3 delayed from mid-2016 to November 2016 to allow further consideration of the findings form Workshop 2.
7	Prepare outputs and disseminate findings	- Final ACIAR report including: draft report for review and Indonesian language summaries; future research priorities - Visit to MMAF Directorates to communicate project progress and findings following each workshop - Journal articles (2) drafted and submitted.[1] - Identify research priorities and opportunities to enhance livelihoods of SSF and coastal communities	Completion in December 2016. In progress. For completion in December 2017. In progress. For completion in 2017/early 2018. In progress. For completion in December 2017.	Interim Draft Final Report completed in July 2016. Draft Final Report in Development following Workshop 3 (November 21 to 25 on Lombok). Project evaluation completed, and findings drafted with partners. Presentation on preliminary findings made to global audience in 2016: Stacey, N. et al. Small-scale fisheries in Indonesia: benefits to households, the roles of women, and opportunities for improving livelihoods. 6th Global Symposium on Gender in Aquaculture and Fisheries (GAF 6), 3-6 August 2016, Bangkok, Thailand Paper for special issue in *Maritime Studies* in development (late 2017) Presentation of some project results by Indo-Pacific Fish Conference in October 2017 by Dr Vanessa Jaiteh. Presentation to Indonesian government Ministry of Marine Affairs and Fisheries National Symposium (Simposium National Hasil Ristet, KKP) Adhuri, D et al 25 October 2017. Enhancing coastal livelihoods in Indonesia: An evaluation of recent initiatives on gender and livelihoods in small scale fisheries.

[1] Potential titles for journal articles: 1. Enhancing coastal livelihoods in Indonesia: An evaluation of recent initiatives on gender and livelihoods in small-scale fisheries for Special Issue in *Maritime Studies;* 2. An action research agenda for improving the visibility of small-scale fisheries and their food security impacts. *Human Ecology/Society and Natural Resources.*

7. Key results and discussion

This section presents the summary results of the two main components of the study: the literature review (7.1) and evaluation of small-scale fisheries projects in Indonesia (7.2). The full literature review is provided in Appendix 11.3[9] and the summaries of Project characteristics are documented in Appendix 11.1.2.

7.1 Literature Review Summary: The benefits to households, the roles of women, and opportunities for improving livelihoods in small-scale fisheries with a focus on Indonesia

7.1.1 Key result

- Part A of the literature review synthesises the global context of SSF, their characterisation in Indonesia, and their contributions to livelihoods and wellbeing; secondly on gender in SSF, including women's roles and contributions at the household level, and the gendered impacts of SSF vulnerability; thirdly on gender, livelihood development and policy in SSF; and fourthly on gender and fisheries research and methods;
- Part B of the review examines approaches to SSF livelihood enhancement, diversification and finding alternatives, in coastal communities and research involving women in particular. It includes a review of methodologies/approaches to studies of livelihood interventions in coastal communities and their successes, failures, constraints and opportunities, as well as examining how gender has been included in these approaches.

7.1.2 Discussion

The literature review (Section 7.1.3, Appendix 11.3) revealed that despite the significance of small-scale fisheries in Indonesia, few data are gathered by government or researchers on the contribution of SSF to households (e.g. for food security, income, employment, cultural values). These data would allow the gender roles and the contribution of women's fishing related activities to household livelihood outcomes and wellbeing to be investigated. They are essential to improving understanding of the role of SSF in food security and livelihood sustainability and to inform policies for effective local management and governance.

The significance of understanding the role of men and women in fisheries and improving and sustaining livelihoods for coastal resource-dependent communities, have become prominent objectives at all levels of government. This is reflected in the recent 2015 FAO *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries* (FAO 2015) and the agendas of government, NGOs and research and development agencies in Indonesia.

The review also found a dearth of published literature on gender, women and livelihood studies globally and for Indonesia. Further, the exclusion of women from SSF census and analysis underestimates their participation in all aspects of fisheries, which has flow on effects for governance, resource management, livelihood development and policy (Koralagama *et al.* 2017). Although progress is being made to develop gender-sensitive policies and programs relating to fisheries in some countries, such as the FAO "SSF Guidelines" (FAO 2015) and other initiatives to enhance statistical reporting by FAO, more needs to be done to promote gender equity for livelihood sustainability (Harper *et al.* 2017).

From the review, it was clear that sustainable livelihood interventions can be flawed at both the conceptual and operational level because, despite worthy goals and objectives, they often fail to account for the complexities of existing livelihoods (de Haan & Zoomers 2003; Wright *et al.* 2015;

[9] Stacey, N. E. Gibson and R. Fitriana (2017) *The benefits to households, the roles of women, and opportunities for improving livelihoods in small-scale fisheries with a focus on Indonesia*. *Unpublished Literature Review*. Prepared for the ACIAR Small Research Activity, Project Number FIS/2014/104, Charles Darwin University, Darwin.

Pomeroy et al. 2017). Many interventions are predicated on an incomplete understanding of community social dynamics (Brugere *et al.* 2008), implemented on short time frames and without good quality empirical research (Wright *et al.* 2015), adequate documentation of both successes and failures (Ireland 2004), and do not incorporate a monitoring and evaluation component (Bennett 2010; Pomeroy *et al.* 2017). In particular, the absence of genuine participatory approaches, skilled facilitation (IMM Ltd 2008) and/or assessments of the social, economic and cultural feasibility of initiatives, prior to commencement of restrictions on access to natural resources (Pomeroy 2013), hobble efforts to engage communities, reduce vulnerability and reverse environmental decline.

The review identified that a better understanding of existing livelihoods is needed to identify points of entry to improve existing livelihoods, rather than implement alternatives before identifying interventions. The Sustainable Livelihood Framework provides an approach to do this for SSF and increase the chances of improving livelihoods in coastal communities and avoid failures of the past. The needs of communities should be identified early in project planning in order to:

- To better understand the drivers of unsustainable resource use in the local context link livelihood intervention programs (enhancing and/or seeking alternatives) to sustainable resource governance regimes; and
- Provide enterprise development for enhancing livelihoods and seeking alternatives in projects with skills training and business planning support.

While the Sustainable Livelihood Framework can provide the basis for livelihoods development, it is important to realise that there is no blue print or correct approach and each program has to be adapted to suit the particular social and ecological context. However, key principles can be applied to enable more sustainable and successful outcomes: first and foremost is a people centred and participatory approach

In summary, drawing from the range of practitioner and academic views from conservation, development and fisheries management research, there is general consensus on best practice approaches for improving livelihoods of coastal communities, although there are limited successful examples. These suggestions range from methodological (use of adapted SLF, best practice guidelines and improved on ground practise); to improved project planning, design, implementation and monitoring/evaluation. Good quality multidisciplinary feasibility assessments are necessary to ensure impacts on those most vulnerable are minimised or that interventions are targeted towards the most needy. Understanding the social, economic, cultural context and governance systems and drivers are just as important as the environmental context. Given sustainable livelihoods rely on diversity, interventions need to consider portfolios of livelihood strategies as part of linked social-ecological systems and not consider particular livelihoods (e.g. fishing) on their own. Projects require good support services such as business planning, skills, knowledge and learning and long-term support - invariably support is short term within project and funder time frames, but this is not in line with community realities. Incentives, microfinance are also identified as important and interventions needs to be able to connect directly with impact on natural resource sustainability – as the evidence has clearly shown these linkages between alternative livelihoods and natural resource sustainability from past attempts are weak.

7.1.3 Summary Literature Review

Part A: Characterising Small-scale fisheries

FAO global data, compiled by the Food and Agriculture Organisation (FAO) of the United Nations, estimates that in 2012, there were 35-40 million part-time or full-time small-scale fishers and up to 150 million ancillary fishworkers worldwide, with more than 85% situated within the waters of Asia (FAO 2012). Recent global figures show that small-scale fisheries ("SSF") involve more than 90% of the world's capture fisheries (FAO 2015, 2016b). The contribution of SSF to household food security, income and employment, cultural and social benefits, reducing vulnerability, and to local and regional economies throughout the developing world, is now receiving global recognition. There is also increasingly acknowledgement of the role of women in fisheries. This recognition is essential

to improving the role of fisheries in food security and livelihood sustainability, and to inform policies for effective fisheries management and governance.

Small-scale fisheries typically operate from shore or small vessels using labour intensive, manual and/or low-technology gears to target a suite of species and habitats (Allison & Ellis 2001; Garcia *et al.* 2008). Compared to large-scale fisheries, which are mostly commercial in nature and comparatively distinct (Garcia *et al.* 2008), the characterisation of SSF is more difficult due to variable and often inappropriate usage of the terms subsistence, traditional and artisanal (and lack of recognition of the commercial nature of small fisheries [10] (Stacey 2007); The diversity of vessel types and sizes, gears employed, locations fished and crew numbers involved (Chuenpagdee *et al.* 2006), the social and structural organisational units of the sector (Johnson 2006), and the varying contributions to subsistence and commercial outcomes (Branch *et al.* 2002). Nevertheless, seeking a unifying definition of SSF is important to focus the development discourse on the unique contributions that the small-scale sector can provide to fish-dependent societies (Chuenpagdee *et al.* 2006; Kurien & Willmann 2009).

Definitions of SSF are usually based on common characteristics such as small boat size and limited technology (Bene *et al.* 2005; FAO 2015). Reflecting this, Bene (2006 p.5) states:

> "*Small-scale fisheries can be broadly characterised as a dynamic and evolving sector employing labour intensive harvesting, processing and distribution technologies to exploit marine and inland water fishery resources*".

Small-scale fisheries in Indonesia

Indonesia is an archipelagic nation, with great diversity in its small-scale fisheries. It is one of the highest fish-producing countries in the world. FAO estimates there are over six million people involved in fisheries in Indonesia (from a total population of over 250 million) with approximately 95% of fishery production coming from small-scale fishers (FAO 2014). In 2014, it was estimated that 3,344,000 people were employed in aquaculture (fish ponds), and 2,667,000 in capture fisheries (FAO 2016a). Capture fisheries in Indonesia are largely at capacity or over-exploited in some regions, while the aquaculture and mariculture sectors have been rapidly expanding over the last decade (Rimmer *et al.* 2013).

Although regular censuses of fishing activities are conducted by the Indonesian government (Indonesia's Central Bureau of Statistics ("BPS") and the Ministry for Maritime Affairs and Fisheries ("MMAF"), they are limited in their ability to capture the true contributions of women and provide reliable estimates of the number of people involved in small-scale capture fisheries, gleaning, aquaculture (brackish ponds - *tambak*) and mariculture (floating cages and seaweed farming)[11].

Broadly speaking SSF in Indonesia can be characterised as labour intensive operations involving low capital investments and equipment, operating in different parts of the marine ecosystem from shore or small vessels (sail or motor powered) using manual and/or low-technology/labour intensive gears. The catch is mostly for domestic consumption (subsistence and commercial) and trade (barter and sale) but some products are destined for export for international markets (e.g. shark fin, sea cucumbers, trochus shell, seaweed). Fishing involves both men and women (and often children and youth) in different aspects of pre-production, production and post production/post harvesting, i.e. activities as fishers, boat crew, fish processers, fish retailers, and fish farmers.

Fishing is conducted in a range of environments and habitats and often in remote locations. Fishery related livelihoods are often complex, dynamic and adaptive. This can be a part-time or full-time or seasonal activity – as part of diversified livelihood strategies for fishing communities or fishery

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[10] *Given that local trade and bartering are a feature of all small-scale fisheries, there are likely very few truly subsistence fisheries (Berkes et al. 2001). However they are often mentioned synonymously with terms such as traditional and artisanal to engender a sense of communality where fishers utilise a range of craft skills and socially self-organised at the household to village level in contrast to large-scale mechanised industrial fisheries (for an extended discussion on the complexities of classification in small-scale fisheries, see Johnson 2006).*

[11] *See Rimmer et al. (2013) for a detailed review of aquaculture in Indonesia.*

dependant households/populations (Allison & Horemans 2006). Fishing might be a part of diversified livelihood strategies or as a seasonal safety net or 'fall-back' when other strategies (i.e. farming) are unavailable or unproductive. Different social (and ethnic) groups adopt different livelihood strategies to fishing, which means there is wide variation in fishing activities among genders and roles and associated levels of dependence. Fishing communities or fishery dependent households and populations have a strong cultural identity and social norms (Stacey *et al.* 2017), where it is recognized that fishing is a 'way of living' (McGoodwin 2001; Bene, *et al.* 2015).

The range of characteristics and distinctions of gender roles and the roles of men and women in SSF for the Indonesian context is illustrated in Table 7.1.1 (Table 1 in Appendix 11.3). Fishing activities of women tend to involve low technology and to focus on near shore locations and invertebrate target species. Their activities are also carried out during the day and around their other household tasks. The division of labour is often characterised as males engaging in sea-going and fishing activities and women participating in near-shore harvesting, gleaning and post-harvest processing (Table 7.1.1), in reality, it is far more complex. Fishing activity is mostly organized at the household or community level, and while some fishers engage in fishing as part of fleets controlled by middle men, they are largely self-employed and operate informally. Consequently a more robust and integrated analysis of gender is needed in assessing the dynamics of small-scale fishing (Weeratunge *et al.* 2010; Kleiber *et al.* 2014) for improved livelihood development opportunities and policy outcomes (Harper *et al.* 2017; Koralagama *et al.* 2017).

Table 7.1.1 Gender division characteristics of small-scale capture fisheries in Indonesia

Category	Female fishers	Male fishers	Notes
Technology	Low input, unmotorised	Low, medium and high; unmotorised and motorised	Depends on target fish, grounds and economic or patron-client relations
Fishing location	Near shore	Near shore and offshore	Choices depend on accessibility, ability to attend home affairs, severity of the fishing operation due to weather, available opportunities, scale of operations
Target fish	Mostly invertebrates but also smaller species	Mostly fin fish and valuable invertebrates	Choices depend on accessibility, ecosystem, value, quantity, fishing technology, scale of operations. In Indonesia there is less distinction by catch among some coastal populations
Work	Less risky	More risky	Choices depend on fishing technology, distance from the shore, sea condition, responsibilities, obligations, working conditions
Investment	Self-funded	Self-funded and Patron-client dependant	Patron client relations operate for more valuable products
Utilisation of catch	Household consumption and sale to local markets	Sale to local, regional and international markets	
Income	Main/supplementary	Main	Depends on fishing duration, culture, household condition (male/female headed, marital status), quantity, household economy, vulnerability, policy changes

… Table 7.1.1 continued

Category	Female fishers	Male fishers	Notes
Engagement	Pre- and post - harvesting, production, local marketing	Pre-harvesting and harvesting	Depends on home affairs, demographic factors (age, marital status, and age of children) commitment, working hours, culture, safety
Fishing time	Day time	Both day and night	Women also fish at night in some cultures
Relationship with and participation with the governing system	Poor	Good	But many males also have limited engagement Mostly male officers govern the fishing institutions and communication process

Source: Adapted from Koralagama *et al.* (2017).

Diverse contributions of small-scale fisheries

In recent years, increasing global attention has focussed on the important contribution of SSF and fish to the many varied and diverse aspects of livelihoods, poverty alleviation and wellbeing at the individual, household and community levels. This includes their important role as a source of nutritious food (Bene *et al.* 2005; Bene *et al.* 2010; Hall *et al.* 2013; Thilsted *et al.* 2016), income and employment (Allison & Horemans 2006; HLPE 2014; Bene, *et al.* 2015; Bene *et al.* 2016); poverty alleviation (Bene *et al.* 2005), cultural and aesthetic values (McGoodwin 2001), and wellbeing (e.g. Weeratunge *et al.* 2013). Small-scale fisheries can also contribute indirectly to food security by generating household income which can be used to purchase food. The gendered nature of SSF has also been under the spotlight in recent years (e.g. Choo *et al.* 2008; Williams 2008; Weeratunge *et al.* 2010; Matthews *et al.* 2012; Harper *et al.* 2013; Kleiber *et al.* 2014).

According to the FAO "the contributions of small-scale operators are often of greater importance to food security than economic accounting would indicate" (FAO 2016a p.32). But there has been limited research into the contribution of fish to food security in part due to a dominant focus in fisheries research on economic efficiency and biological sustainability (HLPE 2014; Bene, Devereux *et al.* 2015; Thilsted *et al.* 2016).

There is also recognition that SSF are particularly vulnerable to poverty due to their dependence on natural resources and high exposure to the impacts of various socio-political, economic, and ecological shifts and/or shocks (Allison & Horemans 2006; Bene & Friend 2011; Stanford *et al.* 2014; Adhuri *et al.* 2016). The literature also notes the linkages between vulnerability, marginalisation/social exclusion/discrimination and poverty in SSF (Bene 2003; FAO 2004; Every 2016).

In many parts of the world, small-scale fishing takes place in environments which are degraded or where resources are heavily or over-exploited (FAO 2016a). One of the drivers is inadequate governance and management (Jentoft & Chuenpagdee 2015; Purcell & Pomeroy 2015; FAO 2016a), which threaten the benefits to livelihoods provided by SSF to millions of people worldwide, as well as in Indonesia.

In summary, despite their significance in Indonesia, few data are gathered by government or researchers on the contribution of SSF to households (e.g. for food security, income, employment, cultural values) that would allow the gender roles and the contribution of women's fishing to household livelihood outcomes and wellbeing to be investigated (see below). These data are essential to improving understanding of the role of fisheries in food security and livelihood sustainability and to inform policies for effective local management and governance.

Therefore, understanding the role of men and women in fisheries and improving and sustaining livelihoods for coastal resource-dependent communities, are prominent objectives at all levels of

government. This is reflected in the recent 2015 FAO SSF Guidelines and the agendas of government, NGOs and research and development agencies in Indonesia.

Small-scale fisheries, gender and the role of women

Gender is widely acknowledged as a key issue in SSF, directly impacting access to and control over livelihood assets, affecting food and nutrition security, and influencing the nature and distribution of benefits from marine capture fisheries, aquaculture and inland fisheries (Choo *et al.* 2008; Harper *et al.* 2013).

To date, the full role of women in SSF has been largely rendered invisible, which has resulted in them being marginalised from policy and decision-making processes (Kleiber *et al.* 2014; Bene *et al.* 2016; Harper *et al.* 2017). In 2014, women were estimated to comprise 19% of all people directly engaged in fisheries and aquaculture primary sectors, 90% of those engaged in processing activities, and half of the SSF workforce when participation in the primary and secondary sectors are combined (FAO 2016a). Clearly, women form a significant part of the informal and formal workforce[12] involved in SSF activities around the world (Table 7.1.1). The literature richly documents women's participation throughout many levels of SFF value chains, in pre-production (e.g. repair of nets, provision of meals), production (e.g. gleaning, diving, inshore fishers), and post-production (e.g. processing and trade) activities (Fitriana & Stacey 2012; Every 2016); however, it is clear that their activities are restricted by socio-cultural norms, particularly norms around women's reproductive roles within households (Mills *et al.* 2011; Kleiber *et al.* 2014). Further, women's and men's fishing activities are often reported as spatially separated (Matthews *et al.* 2012; Harper *et al.* 2013), with women's activities tending to be concentrated closer to the home and arranged around other household and child rearing commitments.

In Indonesia, women are known to participate across marine capture and aquaculture SSF value chains. In fact, women may comprise up to 50% or more of the people engaged in fisheries in Indonesia. As reported in a recent paper by Ariadno and Amelina (2016), based on data obtained from the MMAF in 2011, 95% of Indonesian fishers are small-scale operators in the fishing business and 42% are women. However women's participation is not reflected in the national government's census programme; women's participation is predominantly in the informal sector and regarded as an extension of their reproductive and household roles (Fitriana & Stacey 2012). Women's roles in SSF are mediated by socio-cultural norms and because of the diversity of ethnic groups in Indonesia, thus differ across the Indonesian archipelago, from gleaners and fishers, to traders and financiers, and processers (Stacey 2007; Fitriana & Stacey 2012; Matthews *et al.* 2012; Every 2016).

Although the roles of women and significance of gender in SSF are gradually receiving recognition, the socio-cultural and institutional structures within which women's fishing takes place need to be explored more fully. This will provide an understanding, in particular, of constraints to women's potential valuable contributions to and inclusion in policy development and governance frameworks (Leisher *et al.* 2016). The current policy and governance frameworks conceal women's participation in SSF (Harper *et al.* 2013; Quist 2016; Alami & Raharjo 2017), and this invisibility contributes to an underestimation of the impacts of SSF activity on the marine environment. There is also need for further exploration of the varied vulnerabilities of men's *and* women's SSF activities, particularly in the face of evolving macro-economic processes and environmental change (Porter 2012).

Inadequate recognition and representation also prevents the unique ecological knowledge of women from being included in policy and governance of marine resources (Leisher *et al.* 2016).

These findings are very relevant to SSF Indonesia, where much of the grey and academic literature is limited to documenting roles, as opposed to providing detailed gender analysis of the socio-cultural and institutional norms that produce inequalities in access to resources and participation in governance and decision-making processes, which have important implications for women and their households.

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[12] *Here broadly speaking the formal sector refers to fisheries where people are paid a wage compared to the informal sector where earnings are based on shares systems.*

The 2016 Gender Special Session at the IIFET Conference highlighted the need for collecting sex disaggregated data and indicators in all aspects of fisheries research on value chains (Williams 2016a). Some commentators have argued that while the SSF Guidelines go some way to addressing gender inequity and inequality, gender is not a cross-cutting issue in the Guidelines (Frangoudes & Kleiber 2016; Williams 2016b). The final report of the 2016 Gender in Aquaculture and Fisheries Symposium (GAF6 at the 11th Asian Fisheries and Aquaculture Forum), *Engendering Security in Fisheries and Aquaculture*, concludes that while the FAO SSF Guidelines have given prominence to national level action for gender equality in fisheries, more needs to be done to put this into practice to engage women in decision making regarding the governance and management of fisheries they participate in, counting women in statistics and allocating resources to support gender equity and human resource expertise (Williams 2016b). Further, Williams (2016b) concludes "the ultimate conclusion of GAF6, however, is that social and fish sector norms will have to be transformed to engender security [in relation to policies, food, livelihoods], as they currently may stand in the way of gender equality and equity. Women will need new political organisations to galvanize the transformation".

A review of the available frameworks, tools and methods, including sex disaggregated household surveys, value chain analysis, gender analysis and livelihood assessments (e.g. World Bank *et al.* 2009; Arenas & Lentisco 2011 Module 13; IFPRI 2014; Kleiber *et al.* 2014; Porter 2014; Hillenbrand *et al.* 2015)[13] show there are many different resources available. However, except for Arenas and Lentisco (2011), who provide practical information on mainstreaming gender into fisheries and rural development projects, the review of resources highlighted that there is no dedicated complete and detailed manual or guideline available, which focuses specifically on SSF and aquaculture in tropical, developing countries with a strong gendered analysis approach. This approach is necessary for teasing out key theoretical, equity and fisheries management and governance policy issues that may be considered in gendered assessment of fisheries and livelihoods.

Part B: Sustainable livelihoods, diversification and enhancement

The Sustainable Livelihoods Approach (SLA) and Framework ("SLF") is an assessment tool for a holistic analysis of how people make a living and has been used in SSF research internationally (see Allison & Horemans 2006). This approach has been adapted by practitioners to provide a Sustainable Coastal Livelihoods Framework (see below) to support livelihoods assessments.

The SLA uses an asset and capabilities-based framework (combining human, physical, natural, social and financial capitals) to understand how and why people choose or combine particular livelihood pathways and strategies. The approach focuses on the capabilities and strengths of individuals, families and households rather than their needs or desires. Central to the framework is analysis of the formal and informal institutional and organisational factors that can influence livelihood outcomes and the vulnerability context (shocks and trends). The approach recognises that poverty and livelihoods are multidimensional, complex and unique, livelihoods are more than economic (income) and a sectoral or single dimensional approach to an intervention can be counterproductive.

Livelihood diversification is the process by which rural households construct an increasingly diverse portfolio of activities and assets in order to achieve increased income, livelihood security and improve their standards of living (Ellis 2000; Brugere *et al.* 2008). Livelihood strategies are dynamic and households and their members (men and women) diversify strategies over time for a range of reasons: in response to changing pressures and opportunities; to reduce vulnerability by anticipating, spreading or addressing risks; or as a coping mechanism due to shocks where households can adopt coping strategies that may result in an entirely different livelihood mix (Ellis 2000).

While some communities are more dependent on fisheries and associated activities than others in Indonesia, in most instances households engage in a diversity of strategies to maintain livelihood

[13] *At GAF5 in 2014, held in India, recommendations included developing train the trainer courses for government fisheries staff for improving gender considerations in fisheries (http://genderaquafish.org/gaf5-2014-lucknow-india/).*

outcomes. These could be natural resource based or 'off farm' activities such as employment, labouring and petty trading. Generally, fishery or marine based livelihood strategies vary significantly across ethnic, gender and occupational groups and this is well documented for traditional divisions of fishing amongst maritime populations in Indonesia. Even where households depend exclusively on fishing, there may be a variation in type of fishing activity on a seasonal basis (e.g. among Bajau, Butonese and Bugis communities) with switching between different target species, gear types and fishing areas and migration to other fishing grounds at particular times of year that can be facilitated through kinship or economic relationships (Allison & Ellis 2001; Stacey 2007). Households may also earn supplementary income through other means outside of fishing or rely on remittance money sent from a family member (Allison & Ellis 2001).

A range of approaches are used to enhance, diversify and seek alternative livelihoods. The approach taken depends very much on the context and reasons why livelihood enhancements or diversification are implemented in coastal and SSF communities. These are normally aimed at:

Poverty alleviation;

Reducing vulnerability;

Protection and preservation of the environment through:

Reduction of illegal and destructive activities;

Reduction of fishing pressures;

Assisting in the conservation of marine habitats and species.

Although there is no universal definition of alternative or enhanced livelihoods, three main approaches have been recognised for defining the scope of options for livelihood enhancement, diversification and alternatives (e.g. Ireland 2004; IMM Ltd 2008; Pomeroy 2013):

- Enhancing livelihoods: improving current livelihood strategies to make them more productive and/or sustainable;
- Supplementing or diversifying livelihoods: adding new components to current livelihood strategies; and
- Finding alternative livelihoods: opportunities for adopting new strategies to support household livelihood diversification.

These can be comprised of natural resource based or non-natural resources based enterprises.

In the context of conservation of natural resources, Wright *et al.* (2015) identify three categories of alternative livelihood project (ALP) interventions:

Alternatives which provide a substitute for the monetary or non-monetary outcomes obtained from exploitation of natural resources. These can be in the form of an activity to provide an alternative resource or method of exploitation to the one currently practiced, and which has lower impact or provides an alternative occupation (e.g. farming to building);

Compensation - for losses incurred in not accessing closed areas; or

Incentives schemes (e.g. payment for environmental services ("PES")).

Alternative livelihood programmes (ALPs)

The main idea behind alternative livelihoods is that they will create an incentive for people to cease unsustainable activity and/or take up another activity which is sustainable. In order to achieve this, the replacement activity has to provide equal or more income than the one being replaced (Briggs 2003; Ireland 2004).

Recently, academics and practitioners have called for a review of approaches in conservation and development circles, as there is limited evidence that ALPs either reduce pressure on natural resources and have a positive impact on biodiversity, or improve livelihood portfolios (Ireland 2004; Brugere *et al.* 2008; IMM Ltd 2008; Bennett 2010; Torell & Tobey 2012; Roe *et al.* 2015; Wright *et al.* 2015). Roe *et al.* (2015:19) note that "in the absence of more robust assessment … there is

currently insufficient evidence to say when and where alternative livelihood projects work, or even why they work…" . They continue: the data are "also insufficient to draw conclusions as to which *types* of projects are more successful than others, and thus broader scaling up of findings is problematic".

One reason many projects have failed is due to a poor understanding of the needs, aspirations, capacities and goals of target communities by those implementing development projects (Sayer & Campbell 2004). Similar findings have been reported from the Philippines in a recent evaluation of 15 livelihood projects and programs with a focus on fishing communities (Pomeroy *et al.* 2017). Other reasons for failure include incorrect assumptions about people's livelihoods, such as, that alternatives will replace their need and desire to continue to exploit a given resource, that fishers will give up lucrative fishing and short-term gains for lower returns (e.g. shark fishers will farm seaweed) and that alternative occupations will reduce pressure on natural resources. A further misconception is that household-level interventions will be easily replicated across homogenous communities and thus ALP will have widespread uptake (Sievanen *et al.* 2005; Wright *et al.* 2015).

The Sustainable Livelihood Approach highlights that a single activity promoted by an ALP is unlikely to fully substitute for benefits provided by the activity it was intended to replace (Ireland 2004). Further, there appears to be little evidence that alternative livelihood interventions, on their own, will be successful in improving livelihood outcomes (Ireland 2004). Wright *et al.* (2015) argue that failure in ALPs stem from shortcomings in the design of projects that do not incorporate a strong livelihoods assessment framework and have a limited understanding of the social context within which livelihoods are constructed (see also Pomeroy *et al.* 2017).

In many cases ALPs are implemented to shift pressure from marine resources after a conservation or marine management initiative has commenced, when communities are already having to cope with negative impacts or displacement from fishing areas (IMM Ltd 2008). When people cannot adapt to changes in resource access, they are likely to find their livelihood outcomes (e.g. income, food) reduced (IMM Ltd 2008). Practitioners have argued that resource users should be given options to diversify away from resources before access is restricted (IMM Ltd 2008).

The process of developing livelihood alternatives should be seen as a means of enhancing their livelihoods (not only ensuring they remain unchanged) but also building capacity to take advantage of new opportunities that management interventions such as MPAs can create (IMM Ltd 2008). This process should be phased in, giving people capacity to adapt to change in access to marine resources alongside environmental protection measures to enable realisation of livelihood outcomes over time (IMM Ltd 2008).

Although such management measures can offer protection and improve environmental services especially in the long term, they can result in sudden negative shocks and adverse livelihood impacts in the short term (IMM Ltd 2008). In some cases, the impacts can result in illegal activity (e.g. Brugere *et al.* 2008) in order to continue to make a livelihood when limited choices are available, as has already been demonstrated in some fishing communities in eastern Indonesia (e.g. Carnegie 2014; Missbach 2016; Jaiteh *et al.* 2017).

It is clear that sustainable livelihood interventions can be flawed at both the conceptual and operational level because, despite worthy goals and objectives, they often fail to account for the complexities of existing livelihoods (de Haan & Zoomers 2003; Wright *et al.* 2015). Many interventions are predicated on an incomplete understanding of community social dynamics (Brugere *et al.* 2008), implemented on short time frames and without good quality empirical research (Wright *et al.* 2015), adequate documentation of both successes and failures (Ireland 2004), and do not incorporate a monitoring and evaluation component (Bennett 2010; Pomeroy *et al.* 2017). In particular, the absence of genuine participatory approaches, skilled facilitation (IMM Ltd 2008) and/or assessments of the social, economic and cultural feasibility of initiatives, prior to commencement of restrictions on access to natural resources (Pomeroy 2013), hobble efforts to engage communities, reduce vulnerability and reverse environmental decline.

Development interventions in SSF and gender

Development interventions in SSF have predominantly been driven by economic imperatives and, more recently, "crisis" conservation narratives which underlie fortress-type marine protected area programmes (Berdej *et al.* 2015; Steenbergen *et al.* 2017). These imperatives have, especially in Indonesia, generated interventions that focus on increasing men's harvest in capture fisheries through the provision of equipment to increase and preserve the value of harvested resources (Stanford *et al.* 2014). Only more recently have programs given some attention to increasing women's ability to participate in markets (e.g. preserving/processing fish for sale in local markets) or providing equipment to support improved harvest (e.g. mangrove crab fattening cages) (Quist 2016).

However, these programmes reflect a "women in development" approach, seeking to increase women's perceived lack of productivity without broader consideration of the socio-cultural norms and power relations that restrict women's access to resources and inclusion in governance processes (Razavi & Miller 1995). These type of programmes have continued, despite efforts to promote gender mainstreaming in SSF and livelihoods programmes (FAO 2007); and it has been argued that a consequent lack of understanding of gender issues contributes to the failure in livelihood development policies and programs (Arenas & Lentisco 2011). With calls for better approaches, gender transformative strategies are currently being implemented in several small-scale fisheries contexts (Cole *et al.* 2014; Rajaratnam *et al.* 2016).

Practitioners and academics have made various recommendations for improved practice, policy management and research in the sustainable livelihood domain (Ireland 2004; Brugere *et al.* 2008; IMM Ltd 2008; Bennett 2010; Torell & Tobey 2012; Roe *et al.* 2015; Wright *et al.* 2015).

Ireland (2004) advocate that a better understanding of existing livelihoods is needed to identify points of entry to improve existing livelihoods rather than alternatives (by applying a sustainable coastal livelihoods analysis based on the adapted SLF) before identifying interventions. Such an approach will have higher chances of improvements in livelihoods and avoid failures of the past. Practitioners advocate three approaches to improving livelihoods and sustainable natural resource use:

The need to better understand the drivers of unsustainable resource use in the local context before interventions;

The need for alternative livelihood projects to better incorporate the wider dimensions (e.g. such as vulnerabilities and policies and processes in the SLF) of people's existing livelihoods; and

The need to provide enterprise development for ALP with skills training and business planning support (Ireland 2004).

In their review, Torell and Tobey (2012 p.70) also identify success factors relating to conservation based enterprises which include: leadership, partnerships, business planning and marketing (with attention to development of existing markets), realistic expectations, triple bottom line benefits, short and long term benefits, strong organisation and community engagement approaches, access and tenure (or control) of natural resources by user groups/ entrepreneurs and supportive government enabling conditions. Addressing governance remains a key challenge for livelihood improvements (Allison & Horemans 2006).

Good practices for establishing coastal micro-enterprises include assessing the current livelihoods, assets and incentives of households; the causes of vulnerability and gender issues and inequities; feasibility assessment for new enterprises; and clear direct relationships between the enterprise activity and biodiversity targets or conservation of natural resources. Torell and Tobey (2012) argue that unless an enterprise is established as part of a larger conservation or NRM goal or program, it will not achieve conservation goals on its own.

Another area identified as a prerequisite to improving coastal and SSF livelihoods is increasing financial investment in marine and fisheries resources management and governance (APFIC 2010; Prescott *et al.* 2015). Local government often accrues financial benefits from fisheries but rarely reinvest these back into fisheries management and governance (APFIC 2010).

The development of a range of microfinance services and options for small-scale coastal fisheries and aquaculture is also considered important to support livelihood diversification (see the APFIC

(2010) report which includes a comprehensive coverage of SEA countries and approaches, including Indonesia and women, and provides recommendations based on best practices and opportunities). Other approaches advocated include flexible livelihood program support with financial and business services, rather than top down externally conceived, technical interventions; feasibility analyses; building on peoples' aspirations and existing strengths and assets within existing institutional arrangements; monitoring and evaluation based on good quality participatory baseline assessments and post-impact assessment (APFIC 2010).

In a recent design for the CTI-CFF Coastfish program on sustainable livelihoods and an ecosystem approach to fisheries management, Pomeroy (2013 p.5) argued that "conventional fisheries management practices have been largely unable…to incorporate the development of livelihood alternatives into fishery policy and management approaches". Part of the problem lies with the agency responsible for management lacking capacity and knowledge of community development to deal with livelihoods and their complexity. Further, "efforts to develop livelihood opportunities should not be seen as a panacea to solving fishery problems" (Pomeroy 2013 p.6). Thus, perhaps one of the best options for livelihood sustainability for a fisher is a well-managed fishery coupled with support to enhance other livelihood strategies and enabling factors of livelihood sustainability. Pomeroy *et al.* (2017), in their review of 15 ALPs in the Philippines came to similar conclusions i.e. that in SSF, fisheries and their management should not be considered in isolation from the livelihoods of the fishing communities.

In order to improve food security and incomes it is necessary to consider a suite of livelihood enhancement and diversification activities, and identify the direct and indirect prerequisites for various types of livelihood activities. Most livelihood studies of SSF have recognised the benefits of diversification as a means to achieve increased income and livelihood security (Brugere *et al.* 2008).

Pomeroy (2013) notes that livelihood diversity, adaptation, incentives and vulnerability are key issues to be considered when undertaking an analysis of livelihood strategies. Further, sustainable livelihood development needs to strengthen "the economic basis of livelihoods by giving coastal people the skills that address the root causes of vulnerability and build resilience to cope with the future" (Pomeroy 2013 p.10). Factors of identity, market linkages, infrastructure and policy, diversity of livelihood options, availability of subsidies/grants, gender sensitivities, social diversity, public services and infrastructure, and regional economic trends must be taken into account.

WorldFish researchers and Pomeroy *et al.* (2017) point to the need for poverty interventions in fishing communities to move away from a singular focus on fishing activities, and incorporate initiatives to improve health, education, and general well-being (Bene *et al.* 2010). This is supported by others who highlight the need for interventions to focus on addressing factors that inhibit livelihood improvement (e.g. education, services, health, social norms, human rights etc.) (IMM Ltd 2008).

Studies have shown fishers are often reluctant to change professions or occupations, and that access to marine resources allows fishers to maintain a 'short term survival strategy' by making daily catches for subsistence and small incomes. Also, if some fishers move away from an open access system, typically many others will continue to fish and expand their take (Bene *et al.* 2010). They argue that alternative livelihoods will only be successful to reduce overfishing "when they are coupled with incentive-blocking or adjusting instruments to control harvest and manage or restrict access in the fishery" (Bene *et al.* 2010 p.14). Such incentives can include limited-entry (e.g. territorial user rights), buy back schemes, gear and vessel restrictions, catch limits and quotas.

Mills *et al.* (2017 Forthcoming) suggest that any livelihood improvement programs should be considered within the context of the existing household livelihood portfolio and interactions amongst activities. They conclude that fishery-only targeted interventions are likely to be ineffective (see also Pomeroy *et al.* 2017). Further, they argue that fishery management needs to take into account the complexity and dynamism associated with fishery related livelihoods and that livelihood intervention programs need to be implemented alongside resource governance and management actions, although this appears to have been rarely the case.

Brugere *et al.* (2008) argue for the need for more research to consider the linkages between uptake of livelihood diversification and impacts on the state of the fishery. Programs need to engage more

strongly with policy issues to support diversification and fisheries management considered within the context of fisher households' livelihoods and social, economic and natural capital contexts.

While the Sustainable Livelihood Approach and Framework can provide the basis for livelihoods development, it is important to realise that there is no blue print or correct approach and each program has to be adapted to suit the particular social and ecological context (see also Allison & Horemans 2006 on application of the SLF). However, key principles (see DFID 1999; IMM Ltd 2008) can be applied to enable more sustainable and successful outcomes: first and foremost is a people centred and participatory approach. Pomeroy (2013) sets out an 8 step process for development of coastal livelihoods which should include: target area definition, community entry and integration, assessments of resources, needs and opportunities, education and capacity development, livelihood options plan, livelihoods implementation (including social, technical policy and infrastructure and market feasibility), long-term sustainability plan and adaptive learning through monitoring and evaluation with participatory practices underlining the process.

In summary, drawing from the range of practitioner and academic views from conservation, development and fisheries management research, there is general consensus on best practice approaches for improving livelihoods of coastal communities, although there are limited successful examples. These suggestions range from methodological (use of adapted SLF, best practice guidelines and improved on ground practise); to improved project planning, design, implementation and monitoring/evaluation. Good quality multidisciplinary feasibility assessments are necessary to ensure impacts on those most vulnerable are minimised or that interventions are targeted towards the most needy. Understanding the social, economic, cultural context and governance systems and drivers are just as important as the environmental context. Given sustainable livelihoods rely on diversity, interventions need to consider portfolios of livelihood strategies as part of linked social-ecological systems and not consider particular livelihoods (e.g. fishing) on their own. Projects require good support services such as business planning, skills, knowledge and learning and long-term support - invariably support is short term within project and funder time frames, but this is not in line with community realities. Incentives, microfinance are also identified as important and interventions needs to be able to connect directly with impact on natural resource sustainability – as the evidence has clearly shown these linkages between alternative livelihoods and natural resource sustainability from past attempts are weak.

7.2 Evaluation of case studies/projects

7.2.1 Key result

Project evaluations appeared to be restricted to assessments towards the end of the project or within months of the project completion. We were not able to find evaluations completed after 5 years, which would provide much stronger evidence of the continuity of the influences from the project on strengthening, diversifying or creating alternative livelihoods.

7.2.2 Discussion and synthesis of SSF and Livelihoods projects

The synthesis of information from the projects and workshop discussions are summarised under the headings of: Range, diversity, focus and gender aspects of projects; Evaluation of Projects – measures of success; and Emerging Themes and issues, below.

Range, diversity and focus of projects

Categories of Projects

The 20 projects were considered in three broad categories: (1) Government of Indonesia or Australia (GOV - 4 projects); (2) those funded and/or lead by an International Agency (INT - 8 projects) such as the International Fund for Agriculture Development, FAO, the Asia Development Bank; and (3) projects lead by regional Non-Government Organisations (NGOs - 8 projects) such as Blue Forests, Indonesian Nature Fund (LINI - Yayasan Alam Indonesia Lestari) or Communities and Fisheries of Indonesia (Masyarakat Dan Perikanan Indonesia – MDPI) (Table 7.2.1). Some projects included academic research components [#1 GOV; #4 GOV; #9 INT; #13 NGO; #14 NGO; #19 NGO; #20 NGO).

Timeframe and duration

The timeframe and duration of projects varied; all were implemented between 1998 and the present (i.e. on-going). Government and internationally funded projects typically had durations of between three and five years, although several projects represented one or more stages of longer-term projects e.g., COREMAP [#7 INT] is a 15-year project now in Phase III (Phase II is included in this review). Many internationally-funded projects, especially those financed through loans [e.g. #5 INT and #6 INT], were aligned with the Indonesian government's five-year planning and programming cycle. One third of projects are still being implemented [#10 INT, #14 to #18 NGO]. Two projects comprised larger management and policy programmes and were accompanied by a small grants program [e.g. #11 INT and #16 NGO], which supported small local NGOs to implement activities ranging between 4 months to 18 months.

Scale and funding

The scale and funding for the projects varied greatly across the three broad categories, with some of the Government and International projects having funds of more than US$40 million and a national focus (e.g., COREMAP II [# 7 INT], IFAD Coastal Community Development [#10 INT]). Some of these projects aimed to work across multiple provinces and districts, in several hundred communities and to benefit thousands of households (e.g. ADB Sustainable Aquaculture Project [#6 INT] worked with 14,000 households and IFAD CCDP with 40,000 [#10 INT]). The scale and funding of Government and NGO projects was smaller and more often at village or district level, with funding of between US$10,000 and $2,500,000 (Table 7.2.1). The number of beneficiaries was similarly reduced for these more local projects – AusAID and ANU's Alternative Livelihood Project [#1 GOV] benefited 60 families; MDPI's mudcrab fishery improvement project [#18 NGO] benefits 140 women.

Focus

The focus of projects also varied quite considerably, depending on the rationale or theory of change underlying the project. The two Australian-funded projects [#1 GOV, #3 GOV] involved trials of aquaculture and mariculture methods and species, with a view to increasing the household income of participants. Other projects were associated with major resource management initiatives and

comprised multiple aligned components aiming to embed management approaches into government policy and implement activities to enhance the livelihoods of coastal fishers. For example, COREMAP/MMAF [#7 INT) introduced community-based and collaborative coral reef ecosystem management, and Worldfish/MMAF [#8 INT) piloted activities for an ecosystem approach to fisheries management (EAFM). Other projects aimed to increase the availability of information about fisheries or to enhance the value of fisheries. For example, MDPI projects (#17 NGO and #18 NGO), sought to introduce harvest data collection technology and Fairtrade certification to tuna and mud crab fisheries. Many projects sought to improve aspects of environmental management (e.g. coral reefs, mangrove forests) and increase livelihood outcomes for resource users by introducing alternative or enhancing existing livelihood activities. Projects implemented by local NGOs were generally narrower in scope and reach than those by other organisations.

Gender aspects

The degree to which gender was incorporated into project design and implementation activities varied considerably. Our assessment focused on two aspects:

Whether there was a clear gender approach (assessed as 'none', 'gender accommodating' or 'gender transformative') in project design and implementation; and

Whether women were targeted specifically in project activities.

This information is documented in the project summaries (Appendix 11.1.2) and in Table 7.2.2 below.

The analysis of available project documentation indicated that there was no clear approach to gender in eight of the 20 projects reviewed (Table 7.2.2). Within these eight projects, the project documentation did not elucidate any gender approach and it was unclear whether activities were targeted specifically at women or they were merely included as part of a fisher/mariculture household. Further while one project concerned a fisheries improvement project in a women-only fishery [#18 NGO], it was unclear why this fishery had been identified and whether measures were being taken to strengthen women's social position.

The gender approach in a further 10 projects could be described as "gender accommodating", in which there was some recognition of gender norms and roles and an effort to develop actions that adjust to and often compensate for them (Greene and Levack, 2010). This involved including women in income generating activities (either through training and creation of enterprise groups for alternative livelihoods or livelihood enhancements – often women-exclusive post-harvest processing groups) to increase women's productive capacities, and in a smaller number of cases, increasing women's participation in community-level institutions. Among this set of projects, there was diversity in the degree to which gender considerations were included – from simply inviting women to participate in consultation or training activities, to recognising gender as a cross-cutting theme [RFLP #9 INT, MFF # 16 NGO], to the more comprehensive gender mainstreaming approach evidenced in the IFAD project [#10 INT], where a gender action plan, with participation targets guided and supported project activities and a gender consultant supported gender focus points in districts.

Only two of the projects were considered as pursuing a gender transformative approach [#8 INT, #13 NGO]. This approach actively seeks to "examine, question and change gender norms and imbalances of power as a means of reaching gender equity objectives" (Greene and Levack, 2010:28). However, in one case it was unclear how this strategy (originating at implementing partner level) affected project activities and whether the project activities resulted in gender transformative outcomes [#8 INT].

A small number of projects had clear gender participation targets for various project activities or nominated quotas for membership or position holders within community and enterprise groups. For example, the Coastal Field Schools program [#13 NGO] established a target of 50% women's participation in field schools, and the Coastal Community Development Project [#10 INT] established the following targets for women's participation: 30% of community facilitators, 30% of participants in village groups and 20% of enterprise groups to be women's groups. A larger number of projects reported on the participation by women and men in activities, groups and memberships.

The projects included a range of activities directed at or inclusive of women's participation (see Table 7.2.2). All but one of the projects included livelihood training to enhance existing livelihood activities or to introduce alternative livelihood activities. In some cases, livelihood training activities were directed at households (e.g. training for seaweed mariculture) and men and women are assumed to have been involved. In other cases, alternative livelihood training was clearly directed at women (e.g., post-harvest processing micro-enterprise groups producing fish-based or seaweed-based snack foods, food preparation for ecotourism development). In over half of these projects, groups and/or individuals were provided with equipment (e.g. cooking sets, ice boxes) to support uptake of the livelihood activity. Many of the projects established village/community level groups and focused the delivery of project activities towards these groups.

A small number of projects included the provision of community-level infrastructure to address basic needs such as access to clean water and sanitation, and one project, MDPI's Fairtrade Certification [#17 NGO] was designed so that a proportion of increased income (the Fairtrade Premium) had to be invested in community infrastructure, which is assumed to benefit women.

The documentation reviewed indicated that only three of the projects provided gender awareness training to project partners (e.g., government agencies and NGOs) and project staff [#6 INT, #10 INT and #13 NGO], and only one project clearly sought to raise awareness of gender issues in communities [#13 NGO].

Overall, gender was conflated with women and very few of the projects sought to address institutional and socio-cultural factors contributing to inequalities in women's access to livelihood resources and governance processes. There appeared to be limited consideration of the impact of engaging women in additional productive activities in addition to their existing triple roles, although documentation from several projects acknowledged issues in relation to scheduling activities to maximise women's participation (i.e. balance against need to care for children). Further, one project drew attention to the challenge of seeking to increase women's participation in community-level governance process without first challenging socio-cultural norms [#14 NGO].

Evaluation

All the completed projects were evaluated to some extent, in most cases in accordance with the project management requirements of the funder, where evaluation was undertaken against indicators included in project logical frameworks. Evaluation activities included quantitative reporting, and in some cases site visits to verify activities, focus group discussions with beneficiaries and interviews with project partners. In some cases, these formal monitoring and evaluation frameworks allowed issues to be identified and additional actions to be implemented to enhance project activities and their effectiveness. In the two Australian-funded projects [#1 GOV, #3 GOV], the evaluation took the form of a project report and focused on the economic viability of trials. Evaluation of the smaller NGO projects was not apparent, not available or was undertaken in a more informal manner (e.g. I-LMMA uses peer review among its network [#14 NGO].

While mid-term and end-of-project evaluations were undertaken, no evaluations appear to have been completed after sufficient time following project completion (e.g. three to five years) to be able to assess the longer-term sustainability of project activities, once the funding ceases and project support frameworks are dissolved.

Table 7.2.1 Summary of project characteristics for projects with a focus on livelihoods and fisheries of coastal communities in Indonesia, grouped into major project categories of Government (of Indonesia or Australia), International and Non-Government Organisations (NGO). Information compiled from completion of project templates by research team. NTT = Nusa Tenggara Timur; NTB = Nusa Tenggara Barat; SE = South-east.

Project title	**Time**	**Scale**	**Funds US$***	**Main Priority**	**Beneficiaries**	**Gender**	**Women**	**Evaluation Conducted**
a) Government of Indonesia or Australia (4)								
#1, GOV: Alternative Livelihoods Project for fishers on Rote and in Kupang Bay (AUSAID/ANU)	2004-2006	District - Rote, Kupang Bay	$241,000	Development (trial of seaweed methods) and Livelihoods	60 families	No	No	Yes (Funder)
#2, GOV: Arafura and Timor Seas Ecosystem Action Program (ATSEA I/GEF)	2010 - 2014	Regional - Aru, Tanimbar	$200,000	Environment (sea ecosystem management)	Coastal communities (210 direct beneficiaries)	Yes	Yes	Yes (Funder)
#3, GOV: Diversification of smallholder coastal aquaculture in Indonesia (AG/ACIAR)	2010 - 2015	District - South Sulawesi, Aceh	$1,813,000	Development (trial of aquaculture species)	134 farmers	No	No	Yes (Funder)
#4, GOV: West Sumatra Economic and Welfare Movement of Coastal Communities (GoI GPEMP)	2012-2016	Province - West Sumatra	$2,205,000	Livelihoods	More than 1784 households	Yes	Yes	Yes (Researcher)
b) International (8)								
#5, INT: ADB- Coastal Community Development and Fisheries Resources Management (INT/ADB)	1998-2005	Village-level (at least 35 villages across 4 provinces) - 5 districts: Riau, Tegal City, Trenggalek, Banyuwangi, East Lombok	$41 million (loan)	Livelihoods and Fisheries	Households with fishery-based livelihoods	No	Yes	Yes (Funder)

… Table 7.2.1 continued

Project title	**Time**	**Scale**	**Funds US$***	**Main Priority**	**Beneficiaries**	**Gender**	**Women**	**Evaluation Conducted**
#6, INT: Sustainable Aquaculture Development for Food Security and Poverty Reduction Project (ADB/MMAF)	2007-2013	District government to village level (5 districts in 4 provinces) - 5 districts: Langkat, Ogan Moring Ilir, Kawawang, Sumedang Buton	$44.6 million (loan $31.6 from ADB)	Livelihoods	Coastal fishers and farmers in the districts	Yes	Yes	Yes (Funder)
#7, INT: Coral Reef Rehabilitation and Management Project (COREMAP) - Phase II	2005-2011	National - Selayar, Pangkep, Sikka, Buton, Wakatobi, Biak, Raja Ampat	$61.4 million	Environment (coral reef protection)	357 communities in 7 districts	Yes	Yes	Yes (Funder and Researcher)
#8, INT: Implementing an ecosystem approach to fisheries (EAF) in small-scale tropical marine fisheries (EU/World Fish/ MMAF)	2012-2014	Regional - government to village level (2 villages in NTB)	$427,600	Fisheries and Livelihoods	Fishers and multi-level government fisheries stakeholders	Yes	Yes	Yes (Funder and Researcher)
#9, INT: Regional Fisheries Livelihoods Programme for South and Southeast Asia (FAO/MMAF)	2009-2013	Regional - government to village level (4 district in NTT)	$2.02 million	Fisheries and Livelihoods	Fisheries and multi-level government fisheries stakeholders	Yes	Yes	Yes (Funder)
#10, INT: IFAD - Coastal Community Development Project (IFAD/MMAF)	October 2012 - December 2017	National - Selayar, Pangkep, Sikka, Buton, Wakatobi, Biak, Raja Ampat	$43.2 million	Development and Livelihoods	9,900 households to date	Yes	Yes	On-going (Funder)
#11, INT: IMACS – Indonesia Marine and Climate Support project, nationwide project (USAID – MMAF/WWF, TNC, CTC, WCS	2010-2014	District – 10 in SE Sulawesi and NTB	$31.9 million, with $1.4 million Small Grants Programme	Fisheries	MMAF - capacity building activities; 100 villages; 26 recipients of small grants (range from private company to village)	No	Yes	Yes (Funder and Independent)

… Table 7.2.1 continued

Project title	**Time**	**Scale**	**Funds US$***	**Main Priority**	**Beneficiaries**	**Gender**	**Women**	**Evaluation Conducted**
#12, INT: Coastal marine planning and livelihood development (TNC)	July 2013 - December 2015	District - Rote Ndao, NTT	$1,020,000	Development	(not clearly identifiable)	No	Yes	Yes (Funder but not available)
c) Regional NGO (6)								
#13, NGO: Coastal Field Schools - part of Restoring Coastal Livelihoods program – Building social and ecological resilience in the mangrove ecosystem of South Sulawesi (CIDA, OXFAM, Blue Forests)	2010 - 2015	Regional - 4 districts in South Sulawesi	$236,350	Environment (mangrove restoration)	1476 participants	Yes	Yes	Yes (Funder but not available)
#14, NGO: Up-scaling community-based fisheries management in Biak and Supiori Regencies (Kabupaten), Papua (Packard/McArthur/National Fish and Wildlife Foundation/I-LMMA)	2015 - present	Village (villages in 8 subdistricts)	$ 24,200	Livelihoods, Environment	Coastal communities in subdistricts	Yes	Yes	On-going (internal and quasi-Independent)
#15, NGO: Sustainable Aquarium Fishery & Aquaculture Project - Les, Bali (various funders/Yayasan LINI [The Indonesian Nature Foundation]	2008 - present	Village (one village, one district of northern Bali)	Not available	Environment (coral reef restoration), Livelihoods	Community members	No	Yes	On-going
#16, NGO: Mangroves for the Future – Sustainable Mangroves and Coastal Livelihoods (MFF/GoI)	2010 - present	Regional – 8 provinces. South Sulawesi, North Sulawesi, Gorontalo, Central Java, East Java, West Java, North Jakarta, Yogyakarta	US$800,000	Environment (mangrove restoration)	Community members	Yes	Yes	On-going
#17, NGO: - Seafood Project (FairTrade USA, MDIP, I-FISH and various funders/ MDPI)	2015 - present	National - 10 to 12 provinces	Not available	Fisheries, Livelihoods	Small-scale fishers and their communities	No	Yes	On-going (Researcher)

… Table 7.2.1 continued

Project title	**Time**	**Scale**	**Funds US$***	**Main Priority**	**Beneficiaries**	**Gender**	**Women**	**Evaluation Conducted**
#18, NGO: MDPI mud crab project, Arguni Bay, West Papua. Fishery Improvement Project - Women's mud crab fishery development (CI/MDPI)	2015 - present	District – Kaimana (West Papua)	Not available	Environment, Fisheries	140 women mud crab fishers	No	Yes	On-going
#19 NGO: Lovina Dolphin Watching Nature-based tourism (JCU PHD /local fisher-boatmen).	2008 - present	village, northern Bali)	research funds	Dolphin-watching income & sustainable management	Village boatmen & local tourist industry	No	Yes	On-going (Researcher)
#20 NGO: Kurma Asih Sea Turtle Conservation (WWF & various private & gov't donations)	1998 - present	Village group West Bali	Nest adoptions & small grants	Sea turtle conservation; livelihood alternatives	Turtle conservation group	No	Yes	Ongoing (Researcher)

Brief description of categories used to summarise the characteristics of projects:

Scale: village, district, province, national or regional (project implemented in Indonesia and other regionally situated countries).

Funds: project budget was converted to US$ as at January in the first year of project implementation (using xe.com 30/08/2017).

Main priority: gleaned from the project's rationale, environment (e.g. coral reef restoration or mangrove restoration), fisheries (e.g. fisheries data enhancement or improvement program), livelihood (e.g. introduction of alternative or enhancement of existing livelihoods), research and development (e.g. research-focused on development of aquaculture/fisheries production methods or species).

Gender: refers to whether there was clear gender approach taken in project planning, design, and implementation. 'No' indicates no or unclear; 'yes' indicates either a gender accommodating or gender transformative approach (see Table 7.2.2).

Women: refers to whether women benefited directly or indirectly from project activities.

Evaluation: refers to whether an evaluation was undertaken at the completion of the project categorised as: Funder – undertaken by funder as part of project lifecycle); independent – undertaken by an independent party at arm's length from the funder/implementers; Researcher – undertaken by academic researcher as part of PhD thesis or other research activity; On-going – project still being implemented, although some type of preliminary evaluation may available in some cases).

Table 7.2.2 Summary of project activities directed at or involving women and project gender approach.

No.	Project	A. Project activities for or involving women, or relating to gender										B. Gender approach		
		Livelihood training		Livelihood activity assets	Community groups (with/without gender quota)				Community infrastructure	Environmental activities	Gender awareness training		No.	Gender accommodating	Gender transformative
		Alterntive	Enhancement		Women's	Conservation	Livelihood	Infra-structure			Program	Community			
1	Alternative Livelihoods Project for fishers on Rote and Kupang Bay (AUSAid/ANU)	Y *											Y		
2	ATSEA I - Arafura and Timor Seas Ecosystem Action Program (ATSEA/GEF)	Y	Y	Y		Y				Y				Y	
3	Diversification of smallholder coastal aquaculture in Indonesia (AG/ACIAR)	Y *	Y *				Y						Y		
4	Economic and Welfare Movement of Coastal Communities (GPEMP), West Sumatra	Y		Y										Y	
5	Coastal Community Development and Fisheries Resources Management (ADB)	Y	Y	Y					Y				Y		

... Table 7.2.2 continued

No.	Project	A. Project activities for or involving women, or relating to gender										B. Gender approach		
		Livelihood training		Livelihood activity assets	Community groups (with/without gender quota)			Community infrastructure	Environmental activities	Gender awareness training		No.	Gender accommodating	Gender transformative
		Alternitive	Enhancement		Women's	Conservation	Livelihood	Infra-structure			Program	Community			
6	Sustainable Aquaculture Development for Food Security and Poverty Reduction Project (ADB/MMAF)	Y	Y				Y Q				Y			Y	
7	COREMAP II - Coral Reef Rehabilitation and Management Project (World Bank/GEF)	Y			Y		Y		Y					Y	
8	Implementing an ecosystem approach to fisheries (EAF) in small-scale tropical marine fisheries (EU/WorldFish/MMAF)		Y *							Y *					Y
9	Regional Fisheries Livelihood Programme (RFLP) for South and Southeast Asia (FAO/MMAF)	Y	Y	Y			Y			Y				Y	

... Table 7.2.2 continued

No.	Project	A. Project activities for or involving women, or relating to gender										B. Gender approach		
		Livelihood training		Livelihood activity assets	Community groups (with/without gender quota)				Community infrastructure	Environmental activities	Gender awareness training		No.	Gender accommodating	Gender transformative
		Alternitive	Enhancement		Women's	Conservation	Livelihood	Infra-structure			Program	Community			
10	Coastal Community Development Project (IFAD/MMAF)	Y	Y	Y		Y Q	Y Q	Y Q	Y		Y			Y	
11	Indonesia Marine and Climate Support Projects - Small Grant Component (IMACS)	Y *	Y *	Y						Y			Y		
12	Coastal marine planning and livelihood development (TNC)	Y *	Y *				Y						Y		
13	Coastal Field Schools - as part of the Restoring Coastal Livelihood (RCL) program (South Sulawesi) (CIDA/OXFAM/Blue Forests)	Y *	Y *							Y	Y	Y			Y

... Table 7.2.2 continued

No.	Project	A. Project activities for or involving women, or relating to gender										B. Gender approach		
		Livelihood training		Livelihood activity assets	Community groups (with/without gender quota)			Community infrastructure	Environmental activities	Gender awareness training		No.	Gender accommodating	Gender transformative
		Alternitive	Enhancement		Women's	Conservation	Livelihood	Infra-structure			Program	Community			
14	Up-scaling community-based fisheries management in Biak and Supiori Regencies - Papua (Packard/McArthur/National Fish and Wildlife Foundation/I-LMMA)	Y *			Y									Y	
15	Sustainable Aquarium Fishery and Aquaculture Project - Les, Bali (various, Yayasan LINI (The Indonesian Nature Foundation)	Y *	Y *										Y		
16	Sustainable Mangroves and Coastal Livelihoods - Small Grants Program (Mangroves for the Future/GoI)	Y *	Y *	Y	Y					Y				Y	
17	i-Fish and FairTrade USA - seafood (MDPI)								Y				Y		

... Table 7.2.2 continued

No.	Project	A. Project activities for or involving women, or relating to gender											B. Gender approach		
		Livelihood training		Livelihood activity assets	Community groups (with/without gender quota)				Community infrastructure	Environmental activities	Gender awareness training		No.	Gender accommodating	Gender transformative
		Alternitive	Enhancement		Women's	Conservation	Livelihood	Infra-structure			Program	Community			
18	Women's mud-crab fishery improvement project, Arguni Bay, West Papua (CI/MDPI)		Y	Y			Y						Y		
19	Lovina (N. Bali) dolphin-watching research project						Y			Y				Y	
20	Perancak (W Bali0 sea-turtle conservation project (WWF/Kurma Asih)	Y*		Y			Y		Y	Y				Y	
	TOTAL	16	13	8	3	2	9	1	5	8	3	1	8	10	2

Notes for Table 7.2.2

Part A – Project activities for or involving women, or relating to gender, provides a summary of the activities or project components that were delivered as part of the projects reviewed. Livelihood training activities marked with an * indicate that the project documentation reviewed did not clearly indicate whether the training activity was specifically directed at women or that women were included as part of a household (with husband and wife attending, or having the option thereto). Livelihood activity assets refers to physical assets that were provided to support adoption of the livelihood training and activity. Community groups refers to groups established to support project activities, some of which had quotas for women's participation or membership or as office-bearers (marked with Q).

Part B – Gender approach provides an indication of the gender approach apparent in a review of available project documentation. No indicates that there was no evidence of consideration of gender issues, or there was no clear approach to gender issues; gender accommodating refers to projects there was some degree of recognition of gender norms and roles and an effort to develop actions that adjust to and often compensate for them (Green and Levack, 2010); gender transformative programs sought to "examine, question and change gender norms and imbalances of power as a means of reaching gender equity objectives" (Greene and Levack, 2010:28).

Evaluating projects –measures of success

Following discussions of how to evaluate the success of projects during Workshops 1 and 2 (Appendix 11.2.1 & 11.2.2), we decided to do this using "measures of success" based on the Sustainable Livelihood Framework (SLF) (Table 7.2.3), which include three main components:

Immediate measures of success – based on the project's impact or outcomes on the five types of livelihood assets or capitals (i.e. human, social, physical, natural and financial);

Livelihood outcomes – identified in the areas of more income, increased well-being, reduced vulnerability, improved food security, and more sustainable natural resource base; and

Longer-term measures of success – based on the project's impact on institutional development, capture fisheries management, and the sustainability of project outcomes.

The project documentation generally reported the immediate impact of project activities or their outcomes in a way that allowed the impact or outcome to be categorised according to the livelihood assets or capitals. However, since project objectives differed, not all projects aimed to have impacts or outcomes in each of the livelihood asset or capital areas (Table 7.2.3).

All projects claimed to improve human assets (e.g. through provision of training, increased awareness of environmental issues), and all but three of the projects claimed to improve social capital (e.g. through the creation of various groups) (Table 7.2.3). Sixteen projects reported improvements in physical capital (e.g. provision of livelihood activity assets or community infrastructure) and only six projects improved financial assets (e.g. through creation of savings groups). Fifteen projects reported their activities as increasing natural assets (e.g., through creation of no-take zones, replanting mangrove forest areas).

The project documentation did not allow project impacts or outcomes in terms of immediate livelihood benefits, as envisioned by the SLF, to be clearly identified. While the differing nature of project objectives meant that some of the livelihood outcomes were not relevant to each project, the project documentation often did not articulate a clear theory of change as to how the project activity would contribute to improved livelihood outcomes. At the same time, the academic literature highlights the challenges of "measuring" livelihood outcomes; for example, human well-being and vulnerability are subjective concepts, which don't lend themselves to measurement by quantitative indicators that are abundant in project logical frameworks. In addition, food security is a multi-dimensional concept that encompasses a considerably greater range of factors than the availability of fish, measured by an increase in catch, catch rates or biomass.

Together this highlights the importance of projects being grounded in an appropriate cause-effect framework, such as the SLF, and in the development of an appropriately designed and funded monitoring and evaluation strategy and selection of indicators that will enable the impacts and outcomes of the project activities to be assessed. For example, evaluations of several projects found that baseline data were not collected, preventing evaluation of project impacts of poverty reduction for example, and further, that the indicators chosen did not measure the identified factor.

Analysis of the project documentation revealed that 15 projects reported to have increased the income of project beneficiaries. While this livelihood outcome lends itself best to quantitative measurement, a wide range in income outcomes was documented for project beneficiaries. It was apparent that the potential increase in income was greater from capture fisheries activities (a men's activity) than other alternative livelihood activities such as mariculture, or in post-harvest processing (a women's activity).

Three projects claimed to have increased well-being[14] but this could not be assessed in the 17 other projects. It was difficult to assess the impact of project activities on the other livelihood outcomes of vulnerability and food security. Twelve projects claimed to have increased the sustainability of the

[14] *Wellbeing in Small Scale Fisheries in an evolving concept with many different components – see Johnson et al 2017.*

natural resource base; however, evaluations also indicated inconsistencies in project design that increased fisheries capacity while trying to increase the sustainability of the fishery resource.

The project team reviewed the project documentation and case study summaries to assess whether the projects have longer-term impacts on institutional development and capture fisheries management. We also examined evidence of the sustainability of project impacts and outcomes.

Impacts on institutional development included whether community institutions had been established by the project, or the operation of existing institutions were enhanced e.g., revitalisation of traditional resource management institutions [#8 INT, #14 NGO), and whether there were improved linkages between institutions (e.g., between community and village institutions and government agencies). Fourteen projects contributed to longer-term institutional development (Table 7.2.3).

Improvements in longer-term capture fisheries management included the embedding of fisheries management frameworks into relevant policy frameworks, the creation of marine protected areas or networks, the creation of community-based natural resource management plans linked to village and district level regulatory frameworks, and the creation and embedding of fisheries data collection technology into relevant policy frameworks. Eleven projects contributed to improvements in longer-term capture fisheries management.

Overall, however, there was inadequate information to assess whether the impacts and outcomes of project activities were sustainable. Some insights were gained when project team members were able to share their personal knowledge and experience of the collapse of institutions and management frameworks established by some of the different projects. In some cases, team members were able to indicate potential positive project impacts arising from subsequent developments after the completion of a project.

Table 7.2.3. Summary of measures of success for improving livelihoods classified into (a) immediate measures (livelihood assets and outcomes) and (b) longer-term measures.

Measure of success		**"Achieved"**			**"Not-achieved"**	**"Not appropriate / not assessable"**
	Government	**Inter-national**	**NGO**	**All projects**	**All projects**	**All projects**
	(4)	(8)	(8)	(20)	(20)	(20)
(a) Immediate measures						
Livelihood assets						
Human capital	4	8	8	20	0	0
Social capital	4	8	5	17	3	0
Physical capital	4	7	5	16	0	4
Natural capital	2	7	6	15	0	5
Financial capital	2	4	0	6	1	13
Livelihood outcomes						
More income	3	7	5	15	0	5
Increased wellbeing *	0	2	1	3	0	17
Reduced vulnerability *	2	4	4	10	1	9
Improved food security *	1	3	2	6	4	10
More sustainable use of NR base	1	6	5	12	1	7
(b) Long-term						
Institutional development	3	6	5	14	2	4
Capture fisheries management	1	5	5	11	2	7
Sustainability *	0	2	0	2	4	16

* = flags categories that were difficult to evaluate for a number of projects: increased wellbeing = 13 projects; reduced vulnerability = 5 projects; improved food security = 8 projects; and Sustainability = 12 projects.

Themes and issues emerging from Project evaluation

We identified four main themes and issues from our evaluation of the 20 projects during Workshop 3 (Appendix 11.2.3):

Trade-offs between livelihood and sustainability goals,

Governance

Conflicted role of markets

Cross sectoral collaboration and Institutional *bricolage*

The main discussion points and 'Lessons learnt' from each of these themes are summarised below.

Trade-offs between livelihood and sustainability goals

While all of the case studies incorporated approaches that aimed, either explicitly or implicitly, to balance livelihood improvement with resource protection, rarely was there recognition that in the short-term, and for some sectors of the communities or user-groups involved, one is often at the expense of the other and that programs aimed at sustainable livelihoods are subject to trade-offs between these objectives. Monitoring and evaluation, insofar as they were incorporated in the projects reviewed, tended to be carried out only on project completion and therefore failed to provide an adequate assessment of the long-term effects of balancing efforts and trade-off between livelihood and environmental sustainability. From initial design to monitoring and post-project assessment, the question of the extent to which reported livelihood enhancement or diversification comes at the expense of resource sustainability due to intensification, or diversion to other sensitive locations or resource bases, needs to be addressed. Conversely, the extent to which the establishment of marine protected areas /no take zones negatively impact upon livelihood opportunities, especially for the poorest segments of the community and for women, requires urgent attention in both short and long-term project appraisals.

The IFAD/MMAF Coastal Community Development project [#10 INT] reports some of the most dramatic successes from a livelihoods perspective, with increased average monthly incomes of 57% for project beneficiaries in 12 sites across Indonesia. While the project report claims an improved natural resource base, it also raises questions about long-term sustainability issues – this results from the project's emphasis on funding new vessel hulls, fishing gear and/or engines rather than more selective gears, smaller vessels and engines to reduce fishing pressure, and notes the potential of these improvements to cause localised over-fishing. The report also points to the need for careful planning and integration of resource assessment and asset distribution to avoid contributing to overcapacity and resource pressure.

In other case studies, seaweed development [GoA/ANU #1 GOV] and aquaculture [ADB/MMAF #6 INT] livelihood diversification projects introduced new risks of plant disease and indebtedness with intensive seaweed and mariculture enterprises. In the latter case, while aquaculture and mariculture enterprises were reported to be performing well at the project conclusion, vulnerability to risks of production oversupply and disease were assessed as requiring ongoing support. The project also reports a decline in water quality in some districts. Similarly, the rapid and unregulated take-up of the GoA /ANU seaweed diversification project was considered to have undermined the project's viability.

The successful diversification of aquaculture in existing prawn ponds (*tambak)*, the focus of GoA/ACIAR [#3 GOV], could drive over-expansion of mangrove conversion to aquaculture ponds in the absence of an effective coastal regulatory regime. Indeed, the general impact of any resource use that has potential to expand through successful marketing, will put stress on resource sustainability without good governance (see further discussion of Governance and Market issues below).

The EU/MMAF [#8 INT] Lombok small-scale fisheries project adopted an ecosystem approach to improving small-scale fishery management and reducing poverty. The approach was to revive traditional community resource management (*awiq-awiq*) and compensate restrictions on fishing with intensified income-generating fish aggregation devices and squid attractors outside of expanded and monitored protected areas and no-take zones. The likelihood of inter-community conflict arising from

exclusion of fishers from other communities was noted in this project, which raises parallel questions regarding flow-on impacts of resource access restriction on livelihoods. On the other hand, successful demonstration projects through model community management and peer-to-peer information sharing, can lead to adoption in other coastal communities, as reported in the I-LMMA Papua up-scaling community based management case [#14 NGO]. This suggests that cases of positive transformation have the potential to be extended to other communities through relatively autonomous but well-facilitated local processes, such as those described in the Lombok and Papua case studies.

Recommendation –Trade-offs between Livelihoods and Sustainability

A thorough review of the long-term project impacts, using the Sustainable Livelihood Approach Framework, needs to be conducted to evaluate both sustainability and livelihood improvement to establish long-term policy and best practice outcomes for both environmental sustainability and social equity. Balanced outcomes for the dimensions of livelihood and environmental sustainability require extended post-project monitoring and ongoing engagement. Attention must also be given to policy changes and the visibility of outcomes if a virtuous cycle between existing policy, project outcome analysis and revised policy and programming is to emerge.

Governance

Attention must be given to the reciprocal effects of pre-existing local structures and project intervention strategies. A number of governance issues play critical roles in achieving or hobbling the livelihood and sustainability goals of the projects reviewed. The role of customary institutions (*adat*) at local level had a significant influence on project effectiveness in a number of cases. This needs to be taken into account in considering project design, implementation and operations (see also point 4 on Cross-sectoral collaboration and institutional *bricolage* below).

Customary institutions were regarded as important contributors to local engagement in the WorldFish/MMAF Lombok SSF [#8 INT], IFAD/MMAF Coastal Community Development [#10 INT], IMACS Indonesia Marine and Climate Support [#11 INT], and TNC/GoA Sustainable Use Planning [#12 INT] and I-LMMA Upscaling Community Based Management [#14 NGO] projects. This influence was especially strong where respected leadership evoked trust in project processes and where these institutions provided mechanisms for tapping into local knowledge and sanction systems. Among examples are the widely studied *sasi* traditional marine resource management system that several projects aimed to activate or revive to give legitimacy, salience and continuity to conservation and development programs. In the TNC/GoA [#12 INT] case study that focused on planning, user rights and mariculture improvement, women were included (which had not been an explicit project objective), reportedly at the behest of the traditional leaders' forum in Rote, prompting the formation of a women's seaweed farming cooperative.

On the other hand, bureaucratic conflicts between different government departments and/or scales of governance, and the potential for elite capture by state officials, customary leaders or patrons (*punggawa*) were widely reported matters of concern. Sometimes this resulted in the outright subversion of project objectives, monopolizing instead of facilitating, public participation and the distribution of project benefits. Among the challenges faced by the national ATSEA/GEF Coastal Livelihoods Demonstration Project [ATSEA/GEF #2 GOV] implemented by UNDP/UNOPS in Aru and Tanimbar, was the limited interest and involvement of local government. The FAO/MMF Regional Fisheries Livelihoods project [#9 INT], aimed at “strengthened capacity among participating small-scale fishing communities and their supporting institutions", was hobbled by lack of government implementation of components necessary to improve management (e.g., vessel register, websites to provide access to fish landing and market information). The decentralisation of government functions from Central to District level, reportedly resulted in a lack of capacity to contribute to project activities and was regarded as a significant impediment to the effectiveness of the ADB Coastal Community Development and Fisheries Resources Management project [#5 INT], carried out in 5 districts / 4 Provinces with a US $41 million loan.

The involvement of fish trader-lenders (*punggawa)* as patrons and informal leaders is much debated in the literature, as is customary leadership insofar as existing authority structures may enable elite capture of project decision-making or the distribution of benefits in communities (Warren and Visser 2016).

[See further discussion of the trader-lender role in fishing communities in the Marketing discussion below]. The I-LMMA Upscaling Community Involvement project [NGO #14 NGO] in Papua emphasises the importance of existing social networks and leadership in selection of its focal project sites. It found that reinforcement of local authority structures and tenure rights has been important in gaining commitment to collaboration. However, it is also reported that the community relationships on which this is built can inhibit rule enforcement, especially when market opportunities conflict with conservation regulations. Prosecution of offenses was disproportionately applied to outsiders compared with in-village offenders because of prevailing relationships based on kinship and hierarchy (Steenbergen 2016). This demonstrates the need for co-management and nested governance to apply checks and balances across governance scales to effectively implement shared governance principles.

Surprisingly, resource tenure and property rights were addressed in only a small number of Case Study reports - #14 NGO I-LMMA] and #16 NGO Mangroves for the Future - despite the general consensus in resource management literature that security of access and benefit is essential for engaging community commitment to sustainable resource management. Defining "clear boundaries" and the rights to access resources associated with the boundaries is a fundamental starting point for commons management. It is unclear whether this was not an issue in the majority of the project sites selected, or whether the difficulties of establishing such tenure rights, especially in marine contexts, led project proponents to circumvent the issue. It may be related to the level of ambiguity in the policy and regulations around community rights and tenure on the ground (not only among resource user groups, but also managers and project staff). To make use of opportunities in the policy arena requires not only knowledge of the formal and informal legal systems, but perhaps even more importantly, also facilitating capacity and network connections. I-LMMA deliberately made an effort to incorporate university legal experts into the process of gaining community level tenure rights because local actors were not able to navigate the complex state laws and regulations themselves resulting in the failure of previous attempts to gain local rights). Involving legal experts (in this case academics from Universitas Pattimura, specialised in maritime law and policy in Indonesia), may have been something that distinguished this project from others covered by the review. It makes a case for inter-sectoral/disciplinary collaboration to push forward development on the ground.

> **Recommendation: Governance**
>
> Establishment of meaningful processes for ensuring local participation and the congruence of policy goals and principles across spatial scales and levels of government, is an urgent governance concern. To this end, attention to both local customary and state legal regimes as these relate to property and resource rights, requires comprehensive consideration.
>
> Ensuring the articulation of government policy and local practice in all stages of project interventions – from design through monitoring and enforcement - is essential for effective programs, as is establishing best-practice mechanisms for local participation in planning, data gathering, decision-making, implementation and monitoring (see also Pomeroy et al., 2017).

Conflicted Role of Markets – synergies and risks

Market access is considered key to livelihood improvement for most of the case study projects, while at the same time directly or indirectly posing potential threats to sustainability. For this reason, it is important to recognise the intimate relationship between governance issues and market chain approaches to increasing incomes in marine resource dependent communities.

Market challenges were explicitly targeted in most of the large-scale Government and International Agency funded programs. The ATSEA Coastal Livelihood Demonstration Project [ATSEA/GEF #2 GOV] in Aru and Tanimbar, the ACIAR [#3 GOV] project on diversification of smallholder brackish water aquaculture, the ADB [#5 INT] coastal community and ADB [#6 INT] aquaculture development projects adopted market based approaches in varying degrees with the aim of achieving poverty alleviation objectives. The FAO/MMF [# 9 INT] and IFAD [#10 INT] projects in particular concentrated attention on improving small-scale fisher livelihoods with project components aimed at market chain and product quality improvement through infrastructure investment, training in down-stream processing and quality control, cooperative and micro-enterprise development, micro-finance provision and/or product diversification. Isolation from markets was regarded in these cases as a

fundamental impediment to the improvement of socio-economic conditions in remote fishing communities.

Market access was also important to the smaller-scale projects typically run by non-government organisations (although commonly also funded by larger international agencies and granting bodies). In 3 of the 8 NGO case studies, market development was to be achieved through Fairtrade and Sustainable Resource certification systems so that livelihood and sustainability principles could be built into improving the value chain. The MDPI [#17 NGO] Fairtrade seafood and [#18 NGO] Mud crab fishery projects seek to use premium pricing mechanisms through Fairtrade certification and the Fishery Improvement Program respectively to provide income benefit incentives to articulate best-practice harvesting, adherence to government regulations and a local role in marine protected area surveillance with livelihood improvements. Like the MDPI programs, the village-based Yayasan LINI [#15 NGO] project is collaborating with aquarium fish marketing chains to apply stewardship certification principles to develop an environmentally benign aquaculture and regulated capture fishery for marketing ornamental fish following collapse of the local industry due to now prohibited potassium cyanide use. Both LINI and MDPI projects recognize dependence on consumer awareness and demand for sustainably harvested products, which links the success of these standards and certification strategies back to governance, information transparency and public/consumer education.

The two Bali case studies of iconic-species nature-based tourism at Lovina [# 19 NGO] and Perancak [# 20 NGO], concerning dolphin and sea turtle conservation and development respectively, have contrasting experiences with market engagement. In Lovina, the dolphin-watching tourism market developed autonomously without planning or regulation, and has substantially increased incomes for local fishers and tourism related sectors in the absence of any formal government or NGO interventions. At the same time, the rapid and unregulated expansion of the industry ultimately endangers the local dolphin population and consequently the livelihoods of hundreds of households now directly and indirectly dependent upon the tourism trade. In contrast, the Perancak sea turtle conservation project has received relatively little support from the weak development of the eco-tourism market to this far west corner of the island, with the consequence that few economic benefits flow on to the community and best-practice conservation principles (such as immediate hatchling release) are ignored in order to capitalise on what little potential there is for income generation through donations.

In most of the cases described, efforts are made to develop human, social and natural capital in tandem with financial capital for synergistic advancement of conservation and livelihood objectives. Most of the project evaluations indicate considerable difficulty in keeping the twin conservation and development objectives in balance, however.

> **Recommendation - Conflicted Role of Markets**
>
> Future research and assistance programs must integrate marketing development with regulatory regimes if genuinely sustainable livelihood improvements are to be achieved through product enhancement, diversification, knowledge and infrastructure upgrading. With respect to SSF access to certification schemes that attempt to draw together livelihood benefits and resource governance, interventions are required to deal with the heavy transaction costs involved to achieve and maintain certification.

Cross-sectoral collaboration and institutional 'bricolage'[15]

It is impossible to identify unqualified 'successes' among the range of case studies reviewed here. The absence of baseline data, invisibility of women's work and of non-commercial exchanges in small-scale

[15] 'Institutional Bricolage' frames local development (and decision-making) as progress occurring through often ad hoc, informal and multivalent processes that give local meaning and value to foreign approaches, ideas and concepts. As such these become part of, or at least find function within, existing socio-political contexts (e.g. interests, norms and power relations).

fisheries, lack of consistent criteria and measures of improvement, pressures for satisfactory reports to donors, limited post-project evaluation and short project time-frames, make analytic comparisons across cases a difficult exercise. Diverse contextual factors lead to mixed and unpredicted outcomes that are likely to shift with time and circumstances. Attention to the '*bricolage*' approach proposed by Cleaver (2012) focused on process, interpersonal and institutional engagement, human and social capacity building, and incremental improvement, is arguably a realistic approach to many of the wicked problems posed by the issues of livelihood sustainability addressed in these interventions. A number of features of these projects resonate with the literature on adaptive co-management by which local communities and resource user groups are enabled to work with government, international agencies, NGOs and academic researchers toward positive conservation and development goals.

Most of the case-studies reviewed went beyond the earlier conservation and development approaches that devoted heavy expenditure to infrastructure and equipment, now increasingly favouring capacity building and knowledge acquisition. Although three categories of intervention projects are distinguished in this review, ground level activities for government and international agency projects were often carried out by the local NGO sector within projects sponsored by agencies listed under the other two categories. The role and importance of cross-sector engagement and information sharing is a subject of considerable importance, especially with respect to practical outcomes dependent upon local knowledge, good working relationships and continuity of engagement. This is especially problematic in Indonesia with its four tiers of government – central, provincial, district, village – and particularly in areas distant from Java.

There is increasing stress across all three categories of intervention on the engagement of customary institutions, user-groups and women if livelihood improvements are to be achieved. More attention is being given to NGO facilitators, extension agents and local formal and informal leaders, who are potential institutional *bricoleurs*, experimenting with old and new knowledge and techniques that offer prospects for ground up change adapted to local circumstances. Smaller scale NGO projects, in particular, have adopted strategies that give the greatest attention to participatory approaches meant to increase local ownership of project goals. The Blue Forest Coastal Field Schools [#13 NGO] use the field school model to introduce local experimental approaches to organic mariculture and mangrove rehabilitation and use. The I-LMMA project on upscaling community based management [#14 NGO] relies on pilot village programs, where 'learning centres' are established to facilitate replication of successful experiments in surrounding communities. The large-scale IFAD/ MMAF Coastal Community Development project [# 10 INT], with a US$43 million budget, similarly uses village information centres to support its enterprise development program, although it reports difficulties in operationalising the project because of its broad scope and complexity.

The involvement of academic researchers from local universities is a notable feature of several case study efforts to bring together traditional knowledge and scientific expertise. For example, the Blue Forest Field Schools [#13 NGO], I-LMMA, [#14 NGO] learning centres and TNC - GoA [#12 INT] mariculture project for upgrading seaweed, mud crab and sea cucumber cultivation, rely on expertise provided by academic researchers for scientific advice and mentoring. In the TNC-GoA project, the local University involvement pre- and post- project was regarded as providing important continuity that compensates for the limitations of short-term project time-frames. In the EU project that aimed to revive traditional resource management systems in Lombok [#8 INT], while introducing intensified capture technologies, academic researchers also facilitated continuity, enabling new programs to build upon the previous accomplishments. In larger projects, academics are often involved as consultants in helping to define the objectives of data collection and in assessment and appraisal of the data.

Recommendations: Cross-sectoral collaboration and institutional *bricolage*

These recommendations converge on a few core principles:

Participatory and adaptive co-management approaches must be introduced from the outset to engage communities, build trust and adapt project objectives to sustainable coastal development and community based natural resource management goals (see also Pomeroy et al., 2017).

Projects need to establish an effective *bricolage* approach to relations between levels of government and other sources of influence on fisheries and communities in the project area. This includes: the collaborative engagement of experienced NGO facilitators and extension officers with ongoing commitment to local communities and experience in dispute management, capacity building, marketing and data collection, as well as academic researchers with long-term action research agendas. The ability to collaborate across government, NGO and local community sectors is another important pivot in the *bricolage* scenario that deserves attention and support in policy agenda setting and resourcing.

Lessons learned

Eight of the 20 projects evaluated are on-going and the final documentation of lessons and recommendations for these projects is not yet complete. The summary below, initiated during discussions at Workshop 3 (Appendix 11.2.3) and developed further after this workshop, is based on the documents available to date, including some projects with mid-term evaluation reports. Below, we provide a summary of key lessons learned based on *available* project documentation for the project design phase, and scale and scope; social, micro-enterprise/financial lessons, institutional or capacity related lessons and those related to livelihood diversification recognising there is some overlap across topics. The lessons learned have been summarised under nine headings:

1. Project design and Preparation,
2. Scale and scope of projects,
3. Social capital/engagement,
4. Micro-enterprise/financial capital,
5. Institutional,
6. Capacity building,
7. Livelihood diversification,
8. Gender/women specific lessons, and
9. Challenges and constraints.

Lessons learned 1: Project design and Preparation

- Complete a thorough value chain analysis and gender analysis before project starts [IFAD/MMAF #10 INT].
- A proper value chain and feasibility analysis is required to ensure selection of appropriate alternative livelihood activities and that market challenges are considered [ATSEA/GEF #2 GOV].
- Consider environmental factors in site selection and proposed livelihood activities.
- Identifying appropriate SMART indicators to measure project achievements [World Bank/MMAF #7 INT].
- Better alignment/integration of project components to facilitate achievement of desired outcomes (livelihood and conservation) [IFAD/MMAF #10 INT].
- Locally-based implementing and support agency critical for success to build on existing relationships and long-term engagement [ADB/MMAF #5 INT; EU #8 INT; I-LMMA #14 NGO; LINI #15 NGO; IMACS #11 NGO].

- Providing consistent reliable support/funding throughout duration of project [#9 INT].
- Dealing with unexpected conflict resulting from resource management interventions [#8 INT] (i.e. conflict resolution mechanisms) (e.g. stakeholder analysis / feasibility assessment may anticipate these potential conflicts).
- Lack of baseline data to monitor and evaluation project outcomes [#5 INT].
- Tension between actors in value chain – e.g. Fairtrade scheme intended to empower participants by by-passing middlemen, but middlemen are important actors in organising community and fish trade [#17 NGO].
- Providing post-official project completion support [ATSEA/GEF #2 GOV].
- Project partners/implementers need to have relevant and adequate expertise/skills in livelihood/environmental issues [#7 INT; #12 INT].

Lessons learned 2: Scale and scope of projects

- Set realistic scope and scale (geographic and beneficiaries) of projects to increase their manageability and chances of success [EU #8 INT; FAO/MMAF #9 INT].
- Develop shared understanding and expectations between project partners and participants [ADB/MMAF #6 INT].
- Ensure that projects have the capacity for adaptation and flexibility throughout project lifecycle to allow adaptation to direct and indirect influencing factors/vulnerabilities (shocks, stressors) [ADB/MMAF #6 INT].
- Ensure awareness and education-based campaigns are linked with additional program activities to support behavioural change [World Bank/MMAF #7 INT].

Lessons learned 3: Social capital/engagement

- Communities need access to basic infrastructure (e.g. clean water, sanitation) before they can consider different livelihood strategies [ATSEA/GEF #2 GOV].
- Participatory approaches and adaptive management framework, qualified facilitators, ensured local engagement and support [ATSEA/GEF #2 GOV; EU #8 INT; IFAD/MMAF #10 INT].
- Build on existing traditional systems where possible [EU #8 INT; I-LMMA #14 NGO].
- Use cultural/social capital of local leaders/champions to enhance project socialisation and behaviour change [IFAD/MMAF #10 INT; I-LMMA #14 NGO].
- Complete a stakeholder analysis to identify broader range of stakeholders to ensure potential interested/affected parties are consulted/involved/represented etc. [FAO/MMAF #9 INT; ADB/MMAF #5 INT].

Lessons learned 4: Microenterprise / financial capital

- Projects restricted to funding cycles and subject to successful funding applications, i.e. revolving funds, may not be appropriate mechanisms to finance livelihood transformation [World Bank/MMAF #7 INT].
- Linking enterprise groups to markets is important for the sustainability of activities e.g. increasing the connections of women outside their village [IFAD/MMAF #10 INT; LINI #15 NGO; MDPI/CI #18].
- Projects that aim to create self-sustaining enterprise groups (i.e. extending beyond the life of the project) need to take into account the individual and group dynamics within the SSF enterprise. Thus, capture fishery groups are typically given equipment on an individual basis, which suits individual nature of fishing and this results in less incentive to stay as group. In contrast, aquaculture and processing groups are given equipment around which activities coalesce and thus have reason to maintain group structure [IFAD/MMAF #10 INT].

- Fisher-driven cooperatives can be a positive organising mechanism: the role of cooperatives at a place within value chain is dependent on context and access to markets and market actors and applicable model in that situation [MDPI #17 NGO].

Lessons learned 5: Institutional

- Engage with government agencies early and often – this will help incorporate project activities into government planning and budgeting processes – embed project implementation within existing government schedules and structures to support sustainability of projects [ATSEA/GEF #2 GOV; #7 INT; #9 INT; #8 INT; #14 NGO #18 NGO].
- The implementing agency needs to assess project management and technical capacity of local NGOs and provide appropriate support to the project throughout its duration [#16 NGO; #20 NGO].
- Involve value chain actors more widely required in project planning and potentially implementation (e.g. traders), to help ensure that improved practices are maintained and reflected in price improvements and standards [#12 INT; #15 NGO; #18 NGO].
- Link desired project outcomes to opportunities in policy landscape [#8 INT; #14 NGO].
- Ensure that structures and processes are in place to support the enforcement of regulations on resource sustainability [MDPI/CI #18 NGO].

Lessons learned 6: Capacity building

- Projects need to consider how to provide on-going support to groups/individuals through extension officers or change agents to address underlying human capital issues [ATSEA/GEF #2 GOV; #4 GOV; #11 INT; LINI #19 NGO; #20 NGO].
- Projects need to consider how to provide long-term skills support to projects, including 'soft-skills' (e.g. partnership building, business, marketing) [#9 INT].
- Participating institutions (government, NGOs) need capacity building as well as the primary target group (beneficiaries) [GPEMP #4 GOV; #6 INT; #16 NGO].
- The approach of using and learning from successful projects to encourage peer-to-peer learning between existing and potential beneficiaries has been shown to facilitate increasing the spread of project impacts [#14 NGO].
- The fish-farmer coastal field school approach builds individual confidence, capacity and learning through livelihood activity cycle [#13 NGO].
- "Training the trainers" is an appropriate mechanism for transferring knowledge transfer and building individual capacity [#9 INT].

Lessons learned 7: Livelihoods/ livelihood diversification

- Pre-project planning and design should include a feasibility assessment of the appropriateness of alternative livelihood activities within the community and the governance of natural resources in the area [#5 INT].
- Strengthening existing livelihood activities to improve product quality, and thus income, has potential [#12 INT].
- Livelihood diversification/alternatives need to be considered within the context of household/community livelihood portfolios [AUSAid/ANU #1 GOV].
- Improved incomes, and dependency thereon, can lead to more exploitative behaviour, undermining the resource base [#14 NGO; #19 NGO] (Brugere et al 2008).
- Misguided assumptions about replacing existing livelihoods with new livelihood activities – in reality, the alternative becomes part of the suite of household livelihoods, not a replacement for an activity and might be depleting natural resources [#7 INT].
- Additional livelihood activities were an additional burden on women's time [#9 INT].

Lessons learned 8: Gender/Women specific lessons (* - note that the majority of projects reviewed did not provide any gender specific lessons learned).

- Gender strategies for regional programmes need to be contextualized at local level [#8 INT]. Complete gender awareness training with communities prior to project implementation. This will increase community awareness of gender roles, and enable women to have access to resources and participation in governance or decision-making [#14 GOV].
- Increase and extend women's networks for marketing their products [#10 INT].

Lessons learned 9: Challenges and Constraints – Institutional?

- Lack of effective local partnerships with government/NGOs hinders implementation of project activities and thus potential outcomes [#9 INT].
- Changing economic, market and policy landscape (macro, micro) can negatively impact on project implementation and outcomes [#5 INT; #9 INT; #14 NGO].
- Making linkages between local, district, national management [#14 NGO].
- Distrust between project partners and participants [GPEMP #4 GOV; #20 NGO].
- Overburdening communities with 'new' social capital initiatives rather than working with existing groups [#10 INT].

Recommendations: Lessons learned

Longer project cycles are required to invest in relationships and increase sustainability of livelihood and environmental outcomes [#9 INT; #14 NGO; #20 NGO]. Selecting cases/situations that will have a high chance of success, based on strong enabling conditions [#14 NGO]. Need for post-project support mechanisms for alternative livelihood activities and community institutions [#13 NGO; #16 NGO]. Need for greater integration between livelihood strategies and desired resource management outcomes (i.e. sustainable management) [IFAD/MMAF #10 INT].

8. Impacts

8.1 Scientific impacts – now and in 5 years

The comprehensive literature review and bibliography developed during this project for small-scale fisheries, gender and livelihoods in Indonesia provides a valuable resource for researchers and managers. The synthesis and summary of projects in a standard template facilitates comparisons across projects and helps to evaluate their success and identify gaps in knowledge on small-scale fisheries, the enhancement of livelihoods from SSF, and understanding the status of knowledge and inclusion of gender approaches in SSF. These activities have identified major knowledge gaps and ways to enhance research (and action) on SSF, livelihood development and build approaches to more effective research in coastal livelihoods in Indonesia. The results from this research are intended to inform future action research proposals that will lead to improved research and practice in coastal livelihoods methodologies, evaluations and training of junior researchers in this area.

The findings from the project will be disseminated to MMAF through consultation with two of the project team members (Dr Dedi Adhuri of LIPI and Dr Budy Wiryawan of IPB). They have been presented at the 6th Gender and Fisheries Symposium at the 11th Asian Fisheries and Aquaculture Forum (Bangkok, August 2016), the MARE People and Sea Conference (University of Amsterdam) on marine resources and livelihoods (Amsterdam, July 2017), the 10th Indo-Pacific Fish Conference (Tahiti, October 2017) and at National Symposium (Simposium National Hasil Ristet, KKP) of the Ministry of Marine Affairs and Fisheries in Indonesia (Jakarta, October 2017). Team member Associate Professor Stacey is collaborating with scientists from the Gender and Fisheries Network as co-editor of special issue of papers to be published following the GAF6 Symposium. Collaboration between project researchers has been developed on similar research topics to progress new knowledge on small-scale fisheries, gender and livelihoods in the Asia-Pacific region. This is building linkages within the project team and with other collaborators (see below). The involvement of project members in this ACIAR project has led to additional academic engagements and research: The learnings and gap analysis from the literature review were used to formulate Ms Emily Gibson's PhD proposal on 'A gendered analysis of fishing and contribution to food and nutrition security in a rural coastal community in eastern Indonesia' in 2016 (at Charles Darwin University). This research is being sponsored by ACIAR project partner Dr Dedi Adhuri (LIPI) and all research permits have been obtained from RISTEK, with field data collection commenced in October 2017.

Associate Professor Stacey (CDU) has been invited to become a co-editor for the Asian Fisheries Science Journal Special Issue based on selected papers from the recently completed GAF6, August 2016 (6th Global Symposium on Gender in Aquaculture and Fisheries). Currently, papers for this Issue are in review, with a submission date of late 2017 for the Issue https://www.asianfisheriessociety.org/publication/previous.php

Discussions are underway between A/Prof. Stacey (CDU) and A/Prof. Kate Barclay (University of Technology Sydney) and partners to develop a collaboration for an Asia-Pacific wide program to develop a toolkit for researchers, government and NGO people working in SSF, gender, coastal resource management and community development in the contexts of the Pacific Islands and southeast Asia. The potential aims of this collaboration are to i) Co-develop a basic framework for a toolkit that could be used across Asia and the Pacific; ii) Translate the toolkit into different languages and develop more location-specific case study materials; iii) Pilot/test the use of the toolkit in the training in 2018, and its use in several communities, and revise it as appropriate. The first formal discussions for this potential collaboration are scheduled for November 2017 and will be self-funded.

8.2 Capacity impacts – now and in 5 years

The whole project team has developed new understandings of Indonesian small-scale fisheries, coastal livelihoods and gender through the literature review and synthesis and evaluation of Indonesian projects carried out during the three project workshops. This has engaged the Australian researchers and Indonesian project participants (Dr Budy Wiryawan, IPB; Dr Ria Fitriani, Dr Puta Liza Kusuma Mustika, Dr Dedi Adhuri) in a collaboration that will build peoples profile through co-authorship on project outputs (reports, papers and conference presentations).

The project also involved people associated with the NGO projects in the research (Ms Ratna Fadilah, Blue Forests, Mr Gede Astana JED) and this will enhance their ability to adapt and apply research techniques and evaluation practices to their NGO programs.

This ACIAR project also involved Australia Australian PhD students with a research focus on Indonesia: Ms Vanessa Jaiteh (Murdoch University, now Dr Jaiteh) and Ms Emily Gibson (CDU) and Pia Harkness (CDU). Ms Jaiteh contributed her knowledge on shark fisheries, shark fishing communities and coastal community livelihoods in remote, eastern Indonesia where information on SSF is sparse. She contributed her findings on shark fishing livelihoods in a publication as part of a Special Issue in Marine Policy and in a recent conference presentation at the 10th Indo-Pacific Fish Conference in Papeete, Tahiti (2-6 October 2017).

The project also contributed indirectly to the PhD research programs of Ms Kimberly Hunnam (CDU) and Ms Gianna-Boris Profumo (CDU) researching SSF in Timor Leste. The collaboration developed with the Research Institute of Environments and Livelihoods at CDU involved an early career researcher Dr Dirk Steenbergen (CDU), and the joint participation of the project with the Arafura Timor Seas Coastal Livelihood Symposium, held immediately prior to Project Workshop 2 in May 2016. Associate Professor Stacey and Dr Steenbergen were editors of the Special Issue on this Symposium that was published in Marine Policy in 2017. Dr Steenbergen has just taken up an appointment as a Research Fellow in the Australian National Centre for Ocean Resources and Security (ANCORS) at the University of Wollongong.

8.3 Community impacts – now and in 5 years

This research has been carried out through desktop and workshop discussions, with no direct community impacts that can be reported at this time. However, communication of the research results to stakeholders through various means should have indirect impact at the community level. The assessments of outcomes and lessons learned from this research are intended to inform future action research proposals (See Recommendations in Section 9.2 below) that will lead to enhanced economic, social and environmental impacts from these future activities.

8.4 Communication and dissemination activities

Summary of project progress communicated:

Oral dissemination:

The project approach and findings were presented at the symposium *Understanding Coastal Livelihoods in the Arafura and Timor Seas: Impacts and opportunities of contemporary approaches to rural development, conservation and resource governance***,** organised by the Research Institute for Environments and Livelihoods (CDU), and held at Charles Darwin University 16th to 18th May 2016. This symposium included participants from the project team and Charles Darwin University, Australian National University, James Cook University, Murdoch University, and Australian Fisheries Management Authority. ACIAR project participants have collaborated with other participants at this meeting and contributed to the outputs from the Symposium – a special issue published in Marine Policy in August 2017 issue 82, special feature: 'In pursuit of sustainable coastal livelihoods: insights from the Arafura and Timor Seas region'. The feature was edited by Dr Dirk Steenbergen (CDU), Dr Julian

Clifton (UWA), Emeritus Professor Leontine Visser (Wageningen University), A/Prof. Natasha Stacey (CDU) and Dr Andrew McWilliam (ANU).

http://www.sciencedirect.com/science/journal/0308597X/82?sdc=1

The full list of papers includes:

- Steenbergen, D., Clifton, J., Visser, L., Stacey, N., McWilliam, A. (2017). Understanding Coastal Livelihoods in the Arafura and Timor Seas: Impacts and Opportunities of Contemporary Approaches to Development, Conservation and Resource Governance. Understanding influences in policy landscapes for sustainable coastal livelihoods. *Marine Policy* Vol 82:181-188; https://doi.org/10.1016/j.marpol.2017.04.012, http://www.sciencedirect.com/science/article/pii/S0308597X17302166
- Steenbergen, D. J., Clifton, J., Visser, L. E., Stacey, N. and McWilliam, A. (2017). Understanding influences in policy landscapes for sustainable coastal livelihoods. Marine Policy 82: 181-188.
- Clifton, J. and Foale, S. (2017). Extracting ideology from policy: Analysing the social construction of conservation priorities in the Coral Triangle region. Marine Policy.
- Prescott, J, Riwu, J, Prasetyo, A & Stacey, N. (2017). The money side of livelihoods: Economics of an unregulated small-scale Indonesian sea cucumber fishery in the Timor Sea. *Marine Policy, Vol 82:197-201;* https://doi.org/10.1016/j.marpol.2017.03.033, http://www.sciencedirect.com/science/article/pii/S0308597X17301793
- Mills, D. J., Tilley, A., Pereira, M., Hellebrandt, D., Pereira Fernandes, A. and Cohen, P. J. (2017). Livelihood diversity and dynamism in Timor-Leste; insights for coastal resource governance and livelihood development. Marine Policy 82: 206-215.
- Steenbergen, D. J., Marlessy, C. and Holle, E. (2017). Effects of rapid livelihood transitions: Examining local co-developed change following a seaweed farming boom. Marine Policy 82: 216-223.
- Jaiteh, V.F., Loneragan N.R. and Warren, C. (2017). The end of shark finning? Impacts of declining catches and fin demand on coastal community livelihoods. *Marine Policy* 82: 224-233.
- These papers and one other were presented in a panel session (see below) at the 8th MARE – *People and the Sea* Conference, which is hosted biannually by the University of Amsterdam's Centre for Maritime Research. 'Dealing with Maritime Mobilities' was the theme of the 2017 conference, which took place from the 3rd – 5th of July and was attended by approximately 275 participants. (http://www.marecentre.nl/2017-conference/).

Panel Session: Understanding Challenges to Sustainable Coastal Livelihoods: insights from the Arafura and Timor Seas Region

- Introduction - Dirk Steenbergen "Panel objectives and themes"
- Simon Foale (JCU) "The Coral Triangle Initiative through the lens of political ecology: lessons for democratising coastal fishery management and food security research in the Asia-Pacific region."
- James Prescott/Natasha Stacey (CDU): "The money side of livelihoods: Economics of an unregulated small-scale Indonesian sea cucumber fishery in the Timor Sea."
- David J. Mills (WorldFish): "Livelihood diversity and dynamism in Timor-Leste; insights for coastal resource governance and livelihood development."
- Dirk Steenbergen (CDU): "Rapid Livelihood Transitions: Impacts of a Rise in Seaweed Farming on Island-livelihoods in Remote Eastern Indonesia."
- Pia Harkness & Natasha Stacey (CDU): "The Timor Sea Montara oil spill: Livelihood impacts on Savu-Raijua District from a transboundary disaster."
- Vanessa Jaiteh (Murdoch University) "The end of shark finning? Impacts of declining catches and fin demand on coastal community livelihoods."

Preliminary results were also presented to Researchers and managers in Asia at the 6th Gender in Fisheries Symposium (https://genderaquafish.org/events/2016-gaf6-august-bangkok-thailand/gaf6-themes/) in the 11th Asian Fisheries and Aquaculture Forum (4 to 6 August 2016, Bangkok). The results were disseminated through the GAF website (https://genderaquafish.files.wordpress..com/2016/06/54_stacey.pdf).

Preliminary results were also presented by Stacey (CDU) at a Research Institute for the Environment and Livelihoods, Livelihoods Seminar Series (July 2016, Charles Darwin University). The presentation of the final results will be presented in the Seminar Series in early 2018.

Presentation on the project progress and results to date by Stacey (CDU) to six ACIAR John Dillon Fellows during visit to Charles Darwin University in 27 February 2017.

Written dissemination:

- ACIAR Fact Sheet (2016)
- Executive Summary of Findings and Recommendations - to be prepared in both English and Bahasa Indonesia.
- Papers as a Special Issue in Marine Policy issue 82, published in August 2017 (see above).
- Journal articles in development

Enhancing coastal livelihoods in Indonesia: An evaluation of recent initiatives on gender and livelihoods in small-scale fisheries For *SPECIAL ISSUE: Women and gender in fishery-related work and communities in MAST (Maritime Studies) Due for submission 1 Nov 2017.* https://maritimestudiesjournal.springeropen.com/

An action research agenda for improving the visibility of small-scale fisheries and their food security impacts. *Human Ecology/Society and Natural Resources (to be prepared in early 2018).*

9. Conclusions and recommendations

9.1 Conclusions

This review of the literature on livelihoods and gender in Indonesia's small-scale fisheries and of the 20 case study projects that represent a spectrum of interventions by government, international agencies and non-government organisations established the continued significance of SSF for livelihoods and food security across Indonesia. The review also reinforces the need for conservation, management and community development interventions in response to the rapid decline of the natural resources that support small-scale fisheries upon which coastal community livelihoods depend. In general, we conclude that improving capture fisheries and their management requires a greater knowledge base, institutional development, enhanced community participation in all stages of program planning and implementation, as well as comprehensive evaluation and ongoing evidence-based adaptation and redesign to achieve best practice management outcomes. Further, the review has shown approaches to livelihood enhancement, diversification and alternatives while diverse, are often flawed at both the conceptual and operational level because, despite worthy goals and objectives, they often fail to account for the complexities of existing livelihoods. This calls for approaches which better understand existing livelihoods and to identify points of entry rather than solely advocating for new alternatives. The flow on effect will lead to higher chances of improvements in livelihoods and avoid failures of the past. This confirms the need for interventions to better understand the drivers of unsustainable resource use in the local context before interventions; for alternative livelihood projects to better incorporate the wider dimensions of people's existing livelihoods; and to provide ongoing provide support to communities (and long-term time frames).

Gender invisibility and the lack of quantitative data on women's roles in SSF has led to an underestimation of the importance of women's contributions to the SSF component of the fishing industry in Indonesia and globally. Typically, women involved in fishing and aquaculture operations are not represented in decision making and governance arrangements for SSF. Qualitative research indicates that women's contributions are substantial in the preparation, processing and marketing of production in small-scale fisheries, leading to the conclusion that this dearth of information needs to be addressed urgently to enable holistic interventions that have the most likelihood of improving household wellbeing. Reciprocal exchange of food and labour outside the formal market represents another area of invisibility which requires the attention of researchers. The contribution of gleaning to household food security, for example, is rarely captured in studies of SSF and coastal community livelihoods because it is typically a subsistence activity carried out by women.

Turning more comprehensive research and data collection on success factors into substantive policy change requires attention to governance issues of community capacity building and institutional complementarity across scales. Large scale projects which engage government agencies at district or national level often fail to achieve the grounded relationships that bring local communities into active participation; whereas small-scale NGO projects at village level face the challenge of scaling up to ensure effective collaboration across what are almost invariably wide socio-ecological systems.

In summary, the most glaring gaps in the available knowledge on SSF, gender and livelihoods arises from:

Inadequate baseline data and long-term follow-up evaluation of interventions that would demonstrate the transferability and sustainability of apparently successful outcomes and remediate those that have failed to achieve objectives to date;

Inadequate information on women's contribution to SSF production, which leaves crucial components of local SSF production unaccounted for and precludes realisation of the full potential of sustainable livelihood interventions and

Good quality best practice examples and models for livelihood enhancements, diversification and alternatives which provide linkages to improved marine resource conditions/sustainability.

In view of these findings, this review makes the following recommendations.

9.2 Recommendations

Following the literature review, we identified a number of recommendations for further research, capacity building and livelihood development to support small-scale fisheries, gender and coastal livelihoods in Indonesia. These complement other recommendations from our evaluation of 20 livelihood projects during the project.

Small-scale Fisheries General Recommendations

Adapt a Sustainable Livelihoods Framework (SLF) for assessing, analysing and evaluating coastal livelihoods (building on the SLF through Sustainable Coastal Livelihood Framework – IMM Ltd 2008) to provide a model for understanding of livelihoods and their context and to measure, monitor and evaluate livelihood interventions, their viability and risks (In English and Bahasa Indonesian).

Develop bilingual supporting training and research materials to undertake Sustainable Livelihoods Analyses and Gendered analyses in the Indonesian SSF sector. (as identified under the ACIAR – Australia Indonesia Strategic Plan in Fisheries (2015-2025) including gender research and engagement with women in management and policy development.[16])

Test and apply these tools to a selection of case studies of small-scale fisheries (identifying the most vulnerable marine resource dependant small-scale fisher populations) in Indonesia. Develop this research through discussions and collaborations with communities, Government, University and NGOs agencies involved in fisheries management and livelihood policy development.

Identify interventions in case studies to promote sustainable coastal livelihoods and identify entry points, i.e. aspects of livelihoods within the SLF, where interventions can best be implemented (e.g. relating to assets, gender, vulnerabilities, policies, etc.) with case studies.

- Identify fisheries and natural resource management opportunities to support livelihood diversity.
- Apply a coastal field school and learning centre approach (like the Fish Farmer Field School used with small-scale shrimp producers in Sulawesi and Locally Managed Marine Areas programs) to support livelihood diversification programs (see Appendix case studies #13 and #14) and their dissemination to other SSF communities.

[16] *P4KSI and ACIAR (Centre for Fisheries Research and Development, Indonesia, and Australian Centre for International Agricultural Research) 2015. Strategic plan for ACIAR engagement in capture fisheries research and capacity development in Indonesia, 2015–25. ACIAR Technical Report No. 88. ACIAR: Canberra. 28 pp.*

Undertake new empirical, action/applied research on livelihood diversification to assess impacts and generate empirical evidence for success factors leading to reduced pressures on marine resources.

- Early and effective community participation in programme design and implementation as well as post-project support is crucial.
- Apply meaningful participatory action research based on SLF principles by putting science at the disposal of local communities and actively involving fishers and resource user groups in the research. This includes involvement in defining the research required to assess assets and the potential for sustainable resource use.

Small-scale Fisheries - Gender specific recommendations:

Undertake grounded research studies to explore the social structures and power relations resulting in the gender differentiated access to, and control over, livelihood assets. This has important implications that affect the ability of men and women to participate in governance and policy, achieve social-ecological resilience to change in global processes and the environment and livelihood sustainability. The proposed research should:

- Estimate women's participation in Indonesian fisheries and their contribution to the economy and food security through direct participation in, and indirect support of, SSF.
- Quantify the catches and value-adding activities of women in SSF communities,
- Provide information on the access to and use of fisheries resources by women to be included in estimating the total level of human pressure on marine ecosystems and species.
- Collect data on women's ecological knowledge of fisheries, an untapped resource in data poor fisheries management systems.
- Investigate ways to increase women's decision-making capacity in SSF for improved fisheries management and policy. This will improve the equity of women in the allocation of resources and decision-making around those resources.

Collaborative gender research - An important source for gender and fisheries research is that promoted through the Gender in Aquaculture and Fisheries Network (GAF) and formal Gender in Aquaculture and Fisheries section established under the Asian Fisheries' Society 17. This network should be supported and promoted in Indonesia as a community of practice and source of resources to promote gender and fisheries research. It also provides a network for discussions and potential collaborations among scientists, academics, technicians, fisheries officers, and Government and NGO workers to facilitate research activity, sharing of information and publication of results18.

Recommendations from case-study evaluation and emerging cross-cutting themes and issues

Trade-offs between Livelihoods and Sustainability - A thorough review of the long-term project impacts, using the Sustainable Livelihood Framework, needs to be conducted to evaluate both sustainability and livelihood improvement to establish long-term policy and best practice outcomes for both environmental sustainability and social equity. Balancing livelihood and environmental sustainability outcomes require extended post-project monitoring and ongoing engagement. Attention must also be given to policy changes and the visibility of outcomes if a virtuous cycle between existing policy, project outcome analysis and revised policy and programming is to emerge.

Governance – Establishing meaningful processes for ensuring local participation and the congruence of policy goals and principles across spatial scales and levels of government, is an urgent governance concern. To this end, attention to both local customary and state legal regimes, in particular as these relate to property and resource rights, requires comprehensive assessment. Ensuring the articulation of

[17] http://genderaquafish.org/

[18] http://genderaquafish.org/2017/02/03/join-gafs/

government policy and local practice in all stages of project interventions – from design through monitoring and enforcement - is essential for effective programs, as is establishing best-practice mechanisms for local participation in planning, data gathering, decision-making, implementation and monitoring (see also Pomeroy et al., 2017).

Conflicted Role of Markets - Future research and assistance programs must integrate marketing development with regulatory regimes if genuinely sustainable livelihood improvements are to be achieved through product enhancement, diversification, knowledge and infrastructure upgrading. With respect to SSF access to certification schemes that attempt to draw together livelihood benefits and resource governance, interventions are required to deal with the heavy transaction costs involved.

Cross-sectoral collaboration and institutional *bricolage* - Participatory and adaptive co-management approaches must be introduced from the outset to engage communities, build trust and adapt project objectives to sustainable coastal development and community based natural resource management goals). Projects need to establish an effective *bricolage* approach to relations between levels of government and other sources of influence on fisheries and communities in the project area. This includes: the collaborative engagement of experienced NGO facilitators and extension officers with ongoing commitment to local communities and experience in dispute management, capacity building, marketing and data collection, as well as academic researchers with long-term action research agendas. The ability to collaborate across government, NGO and local community sectors is another important pivot in the *bricolage* scenario that deserves attention and support in the policy agenda setting and resourcing.

Lessons learned

Enhance the research planning and design phases of projects by considering the following:

- Longer project cycles are required to invest in relationships and increase sustainability of livelihood and environmental outcomes,
- Selecting cases/situations that will have a high chance of success, based on strong enabling conditions,
- Develop and plan post-project support mechanisms for strengthening, diversifying and embedding alternative livelihoods and enhancing community institutions.
- Establish greater integration between livelihood strategies and desired resource management outcomes (i.e. sustainable management) to reduce the potentially conflicting outcomes from enhanced livelihoods and declines in natural resources.

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10.1 List of publications produced by project

Manuscripts in development.

Stacey, N. E. Gibson and R. Fitriana (2017) *The benefits to households, the roles of women, and opportunities for improving livelihoods in small-scale fisheries with a focus on Indonesia*. *Unpublished Literature Review*. Prepared for the ACIAR Small Research Activity, Project Number FIS/2014/104, Charles Darwin University, Darwin. (see Appendix 11.3)

11. Appendices

11.1 Template for summarises of livelihood project summaries on small-scale fisheries and coastal communities in Indonesia

11.1.1 Template developed to summarise completed or current livelihood projects in Indonesia

Issue	Notes
Title of project	*Corporate title of project being implemented*
Funder of project	*Source of funding*
Implementer / partners	*Implementer(s), regional and local partner(s)*
Investment	*Total funding, including portion of livelihood component*
Date/period of project	*Date or period of project implementation*
Location(s)	*Place implemented*
Goal of livelihood activity	*Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*
Approach	*Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability*
Targeted beneficiaries	*What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*
Gender component and women	*Did project design include gender analysis and were women specifically targeted?*
Description of livelihood activity and why it is a livelihood alternative or enhancement activity	*What was carried out and what livelihood enhancement is being done (which assets are being built?)*
Activities implemented	*Describe the key activities or actions undertaken*
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional	*How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.)*
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional	*These could be governance, economic, social, cultural, market etc.*
Evaluation of project	*How was project evaluated? What evidence-based indicators/criteria were used?*
Lessons/learnings	
Opportunities	
Sources of information / references	

11.1.2 Completed templates of projects on small-scale fisheries and coastal communities in Indonesia.

Projects funded by the Government of Indonesia or Government of Australia (GOV)

Case Study # 1 GOV	**AusAID/ANU Alternative Livelihoods**
Issue	Notes
Title of project	Alternative Livelihoods Project for Fishers on Rote and in Kupang Bay
Funder of project	AusAID Public Sector Linkages Program
Implementer / partners	Research School of Pacific and Asian Studies, Australian National University Department of Environment and Heritage, Australian Government
Investment	AU$342,401
Date/period of project	2004 – 2006, preceded by a pilot which began in 2002
Location(s)	Rote and Kupang Bay
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	The project sought to provide a suite of alternative livelihood strategies for poor fisher families. The communities were targeted because they are known to be sources of fishers who are dependent on declining fisheries in Australian waters (MoU Box). The aim was to provide alternative livelihood strategies while that fishery recovered to sustainable levels.
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability*	The driving narrative of the project was poverty alleviation and lessening of vulnerability.
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	In Phase 1, 30 families from the Bajau community of Tanjung Pasir and 30 families from the Rotinese community of I'a were targeted.
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	No; the roles of women and children in seaweed fishery were noted.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The project aimed to undertake social and technical trials of the various alternative livelihood activities. The project provided small loans to allow fishermen to obtain required assets for initial participation in the trial and developed skills and knowledge of the alternative production methods.
Activities implemented ***Describe the key activities or actions undertaken***	In *Phase I*, seaweed cultivation trials were conducted using the longline method. In *Phase II*, seaweed cultivation trials using a vertical method and sea sponge trials were conducted. Sea sponges were collected and sent to a Darwin-based company for assessment of quality and commercial possibilities. Trials were established in Bolok village near Kupang, where the local communities dive and boating skills were suited to the methods required.
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social	The introduction of seaweed offered a new livelihood strategy, with many families achieving 2 harvests prior to the outbreak of "ice-ice" (500 kg of seaweed with a market value of Rp 180,000). The vertical method of seaweed farming offered opportunities for increased harvest and greater returns (5,000 kg with a return of Rp 24,000,000).

Case Study # 1 GOV	**AusAID/ANU Alternative Livelihoods**
Issue - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.)?*	Notes A cooperative was formed in one village to further explore the potential for vertical seaweed farming. The vertical method may be preferred over the long-line method because it uses less space (hence less competition for near-shore reef areas), results in less trampling of coastal reef areas, and seemed to be less affected by disease. However, the rafts used need to be placed in suitable conditions and depths. The project report noted that different villages possessed different skills, leading them to prefer different methods, and also the gender division of labour was altered in the vertical method.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	The seaweed cultivation trial was severely impacted by an outbreak of "ice-ice (*ais-ais*)", a disease that results in stress in seaweeds; it is believed to be caused by changes in salinity, ocean temperature and light intensity, often through poor water circulation around closely/heavily cultivated seaweed longlines. The entire crop of seaweed was destroyed and there were subsequent delays in obtaining new seed. This affected participation levels in further phases of the project and necessitated the write-off of initial small loans given to fishermen to establish their long-lines. There was some evidence that local *ponggwana* sought to undermine their clients' participation in trials and lead to the formation of a cooperative independent from the *ponggwana*. The outbreak prompted recognition of the need to ensure that longlines were spaced appropriately and interspersed with fallow periods (ideally supported by district or village regulations), and also stimulated trials in vertical seaweed cultivation.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	The project evaluation focused on the economic viability of the growing methods, i.e. whether a profit was returned on investment.
Lessons/learnings	The main lesson learned was that reliance on one livelihood strategy can be risky, particularly when rapid uptake of that strategy could undermine its viability. Engagement with government officials and village leaders was important, with a view to eventual integration into relevant development plans.
Opportunities	There are opportunities to further trial the vertical seaweed cultivation method and explore other livelihood strategies such as ranching of trochus shell (*T. niloticus*), tropical abalone (*H. assinina*), hard and soft corals, and sea sponge.
Sources of information / references	ANU (2005) *Report on the Alternative Livelihoods Project for Fishers on Rote and in Kupang Bay*, The Research School of Pacific and Asian Studies of Australian National University, June 2005; Australian Government (2006) *Alternative Livelihoods for Traditional Indonesian Fishermen: Project Summary*, Department of the Environment and Heritage, Marine Division, May 2006.

Case Study # 2 GOV	**ATSEA/GEF Coastal Livelihoods**
Issue	Notes
Title of project	ATSEA 1 Coastal Livelihoods Demonstration Project
Funder of project	GEF/Global Environment Facility
Implementer / partners	Implementing Agency: UNDP Executing Agency: UNOPS Implementation partners: Ministry of Marine Affairs and Fisheries-Indonesia Demonstration project: In Indonesia, it is implemented by local NGOs.
Investment	Total: US$ 2,500,000 (GEF Grant) National demonstration project component: USD200,000
Date/period of project	May 2010- July 2014 The national demonstration project: 2012-2013 (18 months)
Location(s)	Selected areas for Demonstration project: Aru and Tanimbar
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	Component 3: Strategic Action Plan ("SAP")/National Action Programme ("NAP") Initial Implementation Outcome: SAP and NAPs Initial Implementation: Initial implementation of some SAP and NAP components, through targeted demonstration projects addressing high priority transboundary issues identified by the transboundary diagnostic analysis ("TDA"), to demonstrate the capacity of the littoral nations to cooperate in implementing joint activities, as the foundation for full SAP implementation in a future phase / follow-up project. Project Indicator and targets: - The Demonstration Projects commenced within 18 months of FSP start. - All Demonstration Projects completed by end of Full-sized Project ("FSP") and leading to improved livelihoods (15% increase in income) among target communities) and reduced pressure on marine resources
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability*	Demonstration of alternative or supplementary sustainable livelihoods to improve food security and socioeconomic conditions of local communities. New and diversification of livelihood opportunities for improved food security through community-based fisheries and sustainable aquaculture Strengthening or replication of existing initiatives related to livelihood development initiatives providing local employment Aru and Tanimbar: - Community agreement on mangrove conservation (capacity building on mangrove, community awareness about mangrove, support the village spatial planning through the initiation of village regulation, Mangrove rehabilitation - Strengthening the surveillance system by the local fishers
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	Target beneficiaries Indonesia: Aru: - Direct beneficiaries: 100 people (40 women and 60 men) - Indirect beneficiaries: 2384 people Tanimbar: - 50 men and women. Youth School: (28 men and 32 women) - Indirect: 1,136 people

Case Study # 2 GOV	**ATSEA/GEF Coastal Livelihoods**
Issue	Notes
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	Women are specifically target for livelihoods activity. For example: women were involved in Mangrove activities in Aru and Tanimbar.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The activities enhanced the existing livelihoods activities and introducing new activities. The livelihood assets being built are: - human capital (Capacity building in mangrove, seaweed farming, mudcrab, fish processing and marketing aspects as well as group strengthening activities); - social capital (formation of groups) - physical capital (producer goods such as seaweed farming and fishing equipment in Aru, mud crab culture in Tanimbar; and - natural capital (through improved awareness, improved surveillance in Aru and Tanimbar, and sustainable management of marine resources)
Activities implemented ***Describe the key activities or actions undertaken***	Indonesia: - training about mangroves, support the village spatial planning through the initiation of village regulation, Mangrove rehabilitation, beach clean up - Strengthening the surveillance system by the local fishers
Successes and benefits for livelihood outcomes? Direct and indirect? Ecological Social Economic Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.)?*	Benefits: income diversification of target beneficiaries and improved skills in farming and processing.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	A number of issues are identified in the TE: - A value chain analysis was not made for the local livelihoods interventions, although it was indicated as an activity in the design of project. - Limited involvement of local government Other challenges: - Where the market is available, unstable supply of fish stops them from selling the processed product. - Continuous support to beneficiaries will help in improving the awareness
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	The project was evaluated followed the guidelines in UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF Financed Projects.

Case Study # 2 GOV	**ATSEA/GEF Coastal Livelihoods**
Issue	Notes
Lessons/learnings	There is a need for conducting Value Chain Analysis before implementing the livelihoods activities to assess market challenges. Improving some basic infrastructure will help the sustainability of the livelihoods interventions such as the mangrove nursery, and storage for fish processing. Training needs tutorial or post training activities. One training session is not enough to enable the participants to absorb the material. Therefore, ongoing facilitation is needed. This applies for mud crab and fish processing. During the tutorial or facilitation, the participants could share ideas and enhance their knowledge.
Opportunities	The project will be scaling up as it moves into the second phase.
Sources of information / references	Lenoci, J (2014). Terminal Evaluation Report of ATSEA. UNOPS Fitriana, R (2014). Final Report: Coastal Livelihood Projects in Timor-Leste as part of ATSEA Demonstration Project. ATSEA Yayasan Sitakena (2014). Peningkatan Kapasitas dan Pengelolaan Sumberdaya untuk Penguatan Ketahanan Desa Pesisir di Kepulauan Aru. Laporan Akhir ke ATSEA. Yayasan Baileo Maluku (2014). Pelestarian dan Perlindungan Hutan Bakau Sebagai Kawasan Penyanggah Ekosistem Wilayah Pesisir Melalui Rehabilitasi Bakau dan Usaha Budidaya Kepiting Bakau. Laporan Akhir ke ATSEA. Fitriana, Ria (personal communication)

Case Study #3 GOV	**GoA/ACIAR Diversification of smallholder aquaculture**
Issue	Notes
Title of project	Diversification of smallholder coastal aquaculture in Indonesia
Funder of project	Australian Government
Implementer / partners	ACIAR Brackishwater Aquaculture Development Centre Research Institute for Coastal Aquaculture Gadjah Mada University
Investment	$2,021,053
Date/period of project	March 2010 to June 2015
Location(s)	South Sulawesi and Aceh
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	Brackish-water pond (*tambak*) aquaculture is an important livelihood activity; however, production is threatened by viral diseases, increasing input costs and falling commodity prices due to global competition. Many farmers are not able to implement Better Management Practices. The project's goal was to improve the productivity and profitability of small-holder coastal aquaculture and mariculture through diversification of production and identification and evaluation of advisory systems to support implementation. The alternative commodities trialed were lobster, tilapia, milkfish, rabbitfish, grouper, crabs and sea cucumber. The expected outcome was increased income of *tambak* farmers (estimated at less than AUD $60 per month), as well as generation of social benefits such as increased social stability, and increased access to seafood with resultant health benefits.
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability*	The intervention was premised on substituting the resource within an existing production system with the aim primarily of alleviating poverty. A subsidiary outcome was increased food security.
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	The targeted beneficiaries were tambak farmers in South Sulawesi and Aceh. No quantifiable targets were established. The project worked with a small number of farmers, who were identified by partner organisations.
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	The project design did not have a gender component.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The livelihood activity was an enhancement of an existing activity, as farmers already have the tambak infrastructure in place. The livelihood assets being built were primarily human, as new knowledge was acquired about producing the alternative resource.

Case Study #3 GOV	**GoA/ACIAR Diversification of smallholder aquaculture**
Issue	Notes
Activities implemented *Describe the key activities or actions undertaken*	The project undertook range of field trials, with varying success. Tilapia trials showed it was a viable alternative to shrimp, but swimming crab trials were unprofitable. Trials were also undertaken of the edible seaweed *Caulerpa*, known locally as '*lawi-lawi*'. This was shown to be a viable alternative, but at the time, the market was small and easily saturated.
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.)?*	Farmers (51 in Aceh and 83 in South Sulawesi) are reported to have adopted tilapia, *Caulerpa* and swimming crab in their production systems. The project was estimated to have increased production from brackish water tambak in Aceh by 250-350 tonnes, equivalent to AUD $400,000 to $600,000. It was estimated that more than 700 people are employed in producing, growing and marketing brackish water tilapia produced from project-initiated activities. Fishers in Aceh reported HH consumption of 1-5kg of tilapia per week, contributing to food security and increased protein consumption. The project adopted two different approaches to support farmer adoption; in South Sulawesi 11 fisher groups were established, while in Aceh farmer-operated nurseries were established (3 of 7 were still operational at the end of the project). The nurseries supplied tilapia fingerlings to 144 farmers, with a direct economic benefit of AUD$37,000.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	The project report notes that several trials (e.g. rabbitfish, swimming crab) were disrupted by seasonal flooding and flooding of ponds at high tide. The market availability of the commodities trialed varied with product quality (e.g., improved shelf life), distribution chains for some commodities requiring further development.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	The success of trials was evaluated according to economic criteria (revenue of IDR 1-5 million per hectare per crop cycle).
Lessons/learnings	-
Opportunities	-
Sources of information / references	ACIAR (2015) *ACIAR Fisheries Program Project Profiles 2015*.

Case Study # 4 GOV	**West Sumatra Economic Welfare of Coastal Communities**
Issue	Notes
Title of project	GPEMP/ Gerakan Pensejahteraan Ekonomi Masyarakat Pesisir)/the "Economic and Welfare Movement of Coastal Communities"
Funder of project	Provincial Government of West Sumatera
Implementer / partners	14 Institutions at provincial and district (kabupaten) level and local partner(s), led by provincial Department of Fisheries ("DKP")
Investment	20,000,000,000 Rupiah
Date/period of project	2012-2016
Location(s)	West Sumatera Coastal Area
Goal of livelihood activity	Improvement of Economy and Welfare of Coastal Communities
Approach	Strengthen existing technology and human capacity of coastal residents. Develop supplementary fisheries and aquaculture based livelihoods. Develop the processing and 'down-stream' aspects of fisheries. Develop supplementary livelihoods outside of fisheries and aquaculture.
Targeted beneficiaries	The GPEMP is targeted at the poorest households regardless of their primary source of income.
Gender component and women	Interventions specifically targeted at fishers' wives included seaweed farming, processing of the catch, alternative livelihood (sewing) training.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity	Adding Value by fish processing (Processing equipment, supplies to open a small café; Motorbike and cart to sell fish); Alternative Livelihood Aquaculture (Tilapia farming); Alternative livelihood non-Aquaculture (Cows, training for mechanics, Fruit trees (soursop (15,000), guava (5,000) and dragon fruit (1,000); Fish Quality (Fish box/cool box Ice plant, Freezer); Fisher wives (Sewing machines and training Processing equipment); Fish production (Fishing gear and long tail machines) Assets: Asset analysis highlighted that livelihood improvement interventions conducted by the DKP typically emphasized the physical assets of small-scale fishers (58%), rather than the human (27%), social (13%) and natural (1%). Because government policy dictates that money should not be given directly, the financial asset component is small (1%).
Activities implemented	The GPEMP interventions have the potential to help improve livelihoods of boat-owning poor households. Positively, each of the 'new' non-fishing initiatives originating from government agencies besides the Fisheries Agency, such as livestock raising, employment for fishers' wives and fixing machines has the potential to help laborer's too. Likewise, fish farming is something that could develop the livelihood portfolio of laborer's. There are still concerns that the majority of interventions continue to give fish boxes, fishing gear and long-tail machines which do not benefit non-boat owning laborer's.
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional	Encouraging signs for households where a non-fishing livelihood has been developed, DKP data demonstrated that most poor households received fish boxes (64%), fishing gear/machines (12%) or tilapia fish farming packets (9%) along with fruit trees. Government employees spoke positively about the sewing machines and cafes, but these comprised only 3.5% of households that were helped. There is an underlying human capital aspect that has not been considered. In this human capital context fruit trees do not seem the most prudent choice for livelihood improvement without ongoing support, extension, education and market facilitation. The group formation and social capital component of GPEMP is limited and as the following case studies demonstrate, this is a key component for improving welfare in the long term.

Case Study # 4 GOV	**West Sumatra Economic Welfare of Coastal Communities**
Issue	Notes
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional	In general, initiatives have failed to improve livelihoods and reduce poverty, and this has been evidenced by increasing numbers of poor fishing households from statistics, failing fishermen's groups and the creation of a new program (GPEMP) to remedy this situation. Some institutional challenges have been found were: Culture of distrust between institutions; Many poor fishers are institutionally isolated; Institutions lack human resource problem solving capacity and a commitment to the long term; Under-resourced extension officers.
Evaluation of project	There is no evaluation in measuring the success on community welfare, but more on the measuring economic benefit and administration indicators.
Lessons/learnings	These groups will need human capacity to be built in areas of financial management, saving schemes and good administration. They may need more flexibility to account for the migration of some crew. Empowering the poorest coastal households in West Sumatra will take time and energy.
Opportunities	Recommendation for similar future project are: Social Capital: Ongoing support for groups/individuals by institutions through extension officers or other change agents; Well-functioning groups are 'rewarded' with government assistance; Clear, agreed upon data that prioritises who should receive help and independent; evaluation of how the money was spent. Institutional Opportunities to be addressed: Better acceptance of poverty statistics between agencies; Extension officers recognised as the frontline in poverty alleviation; Long-term institutional commitment, even if that means prioritising poorer areas over others and not sharing government aid evenly.
Sources of information / references	Stanford RJ, Wiryawan B, Bengen D, Febriamansyah R, Haluan J. 2013. Exploring fisheries dependency and its relationship to poverty: A case study of West Sumatra, Indonesia. *Ocean and Coastal Management* 84:140-152. Stanford RJ, Wiryawan B, Bengen D, Febriamansyah R, Haluan J. 2014a. Improving livelihoods in fishing communities of West Sumatra: More than just boats and machines. *Marine Policy* 45:16-25. Stanford RJ, Wiryawan B, Bengen D, Febriamansyah R, Haluan J. 2014b. Enabling and constraining factors in the livelihoods of poor fishers in West Sumatra, Indonesia. *Journal of International Development*. DOI: 10.1002/jid.2990. Wiryawan B (personal communication)

Projects lead by international development agency or international non-government organisation

Case Study #5 INT	**ADB/MMAF Coastal Community Development & Fisheries Resource Management**
Issue	Notes
Title of project	Coastal Community Development and Fisheries Resources Management Project
Funder of project	Asian Development Bank
Implementer / partners	Directorate General of Capture Fisheries / Ministry of Marine Affairs and Fisheries Local government agencies Local non-government organisations
Investment	Loan of US $41 million Specific livelihoods focus – US $16.1 million
Date/period of project	April 1998 to December 2005
Location(s)	Bengkalis District, Riau; Tegal City, Central Java; Trenggalek District and Banyuwangi District, East Java; East Lombok District, West Nusa Tenggara
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified.*	The project aimed to address two major problems: (i) depletion of coastal fisheries resources; and (ii) pervasive poverty and social disadvantage of coastal communities. The objectives of the project were broadly to: - promote sustainable management of and conserve coastal fisheries resources by controlling destructive fishing practices and overfishing, and improving fisheries resources and related habitats; - reduce extensive poverty in coastal areas by providing opportunities to increase the incomes and improve the living standards of coastal communities. The project logical framework included the following livelihood-related performance indicators: - well managed coastal fisheries as indicated by community-based coastal resource management (CRM) planning and implementation or 30% increase in fish biomass - communities involved in coastal fisheries resource management (CFRM) planning and implementation and fishing effort regulated within total allowable catch - six landing places improve their environmental conditions and operating efficiency - poverty level reduced from current level of 60% - about 40,000 households ("HH") increase their income by 30% and/or improved their living conditions - 100 fishers' associations and/or cooperatives formed or strengthened, and receive technical, credit, marketing and social services - 20,000 fishers' HH provided with income-generating opportunities - 35 fishing villages have improved basic social infrastructure services Coastal fishing villages in five districts were targeted; however, the Completion Report doesn't clearly specify how or why these villages were selected.
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability*	The driving narrative of the intervention was poverty alleviation – seeking to break the vicious cycle of environmental degradation and poverty in coastal communities. The project was premised on the notion that fishing communities were disadvantaged in part by their isolation from social facilities (water supply, drainage, village halls, roads, and health centres) and markets, and thus one component of the project provided upgrading and rehabilitation of fish landing facilities to improve sanitary and environmental conditions and to enhance the quality and value of fish production by reducing physical losses and improving quality. The project design recognised the need for institutionalisation of coastal resource conservation and management measures and for effective community organisations to be created and empowered.
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries*	The targeted beneficiaries were 5,000 HH with fisheries-based livelihoods (reduced from 20,000 HH at mid-term review). The project Completion Report indicates that these HH were reached.

Case Study #5 INT	**ADB/MMAF Coastal Community Development & Fisheries Resource Management**
Issue	Notes
and did project reach these beneficiaries?	
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	No specific project activities targeted gender; however, women were said to be involved in fish processing activities and other micro-enterprises created by the project.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	- The livelihood activity was enhancement of existing fisheries-based livelihoods, through the building of all livelihood assets. Project components aimed to increase: - human capital by increasing understanding of coastal resources management and improving health through provision of improved infrastructure; - social capital by creating, upskilling and empowering micro-enterprise groups; - natural capital by improving management of and relieving pressure on fisheries resources; - physical capital by improving basic infrastructure relating to livelihood activities; and - financial capital by creating microfinance institutions to support livelihood activities.
Activities implemented *Describe the key activities or actions undertaken*	Component 1 "Coastal Fisheries Resource Management" aimed to rationalise and regulate the use of coastal fisheries resources and conserve fish habitats. Activities included: - establishing fisheries sanctuaries and MPAs; - rehabilitating fish habitats, including rehabilitation and replanting of mangrove areas; - creating artificial reefs and fish restocking; and - reducing overfishing and the use of destructive methods through community-based fisheries surveillance systems. Twenty-six community-based coastal fisheries resource management committees were established, along with 8 district fisheries advisory committees. Each site was given a patrol boat and communications equipment to assist with monitoring and enforcement. Component 2 "Community Development and Poverty Reduction" aimed to promote non-fishing income-generating activities and improve social infrastructure to improve socioeconomic status and quality of life of the coastal communities. Activities included: - organisation of coastal fishers into self-reliant groups, cooperatives or associations to be empowered for coastal fisheries resource management and livelihood and/or microenterprise development through social preparation, training and capacity building; - development of microenterprises and income diversification projects; and improvement of social infrastructure in selected villages. At project completion, 309 micro-enterprises or joint business groups ("KUB") with 4,623 members had been created or assisted; fisheries based KUBs were engaged in fishing, mariculture or aquaculture, fish trading and fish processing; non-fisheries KUBs included support to fishing operations (e.g. supply of fuel, ice and gear), and other activities such as herbal medicine production; goat, chicken and duck farming; tapioca and sago production; furniture making; sewing and kiosks. Eighteen micro-finance institutions (LKMP) were created at four sites.

Case Study #5 INT	**ADB/MMAF Coastal Community Development & Fisheries Resource Management**
Issue	Notes
	One hundred and twenty-nine social infrastructure facilities were built in 34 villages, comprising access roads from fish landings to markets, a wooden jetty, erosion control, drainage, public toilets and garbage collection bins and trucks, water supply lines, deep wells and rainwater catchment tanks, clinics and meeting halls.
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.)?*	The project was described as the first coastal resource management project to introduce the concept of stakeholder community participation in resource management, including monitoring and surveillance. The welfare of over 70,000 HH was improved, with the household income of micro-enterprise group beneficiaries increasing by nearly 50%. The rapid development of micro-enterprises was attributed to (i) intensified community organising and social preparation by a team including the project office, consultants and NGOs; (ii) a successful information and education campaign promoting a shift in livelihoods from capture fishery to other income-generating activities. The infrastructure projects were attributed with improving quality of life through better environmental sanitation, provision of domestic water supply and waste disposal facilities, improved health and nutrition, and protection from flooding. Two MPAs, 21 clusters of artificial reefs, and 10 fish sanctuaries were established, and 300 ha of mangroves were replanted and a further 1,506 ha brought under management of community groups.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	The project Completion Report noted that neither ADB nor the Directorate General of Capture Fisheries in MMAF had the requisite expertise in developing alternative income generating activities, and thus the intention of weaning fishers off depleted stocks and to develop alternative livelihoods was not met. **** Of the 309 KUBs created, most were involved directly in fisheries activities, with only 24 involved in fisheries and non-fisheries related alternative livelihood activities. Further, the project was hindered by lack of thorough assessment of alternative livelihood potentials. The Completion Report noted continued declining fish landings in project villages, with fishing pressure not abating. Project delays resulted from political and economic crises, reorganisation of the responsible agency, devolution of NRM to local government and consequent adjustment in the workforce including loss of capacity within the implementing agency, and issues with contract and procurement management. Further, regular transfer of trained government staff by bupati caused loss of technical capacity. The important role of NGOs in instigating and driving community-level activities was noted, as was the need for on-going commitment to compliance, enforcement and monitoring by government. Baseline poverty data were not collected, so it was not possible to ascertain what impact the project had in reducing poverty.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	The project was evaluated according to ADB's standard evaluation framework, which focuses on satisfaction of quantitative indicators identified in the logical framework.
Lessons/learnings	Key lessons from the project are the need for: - Community involvement and empowerment, with social preparation and capacity building an essential step; - Continued reinforcement of awareness campaigns; - Early and on-going involvement from local government to support CRM groups;

Case Study #5 INT	**ADB/MMAF Coastal Community Development & Fisheries Resource Management**
Issue	Notes
	- Proper assessment of the potential for alternative livelihoods.
Opportunities	The Completion Report noted multiplier effects of project activities in neighbouring villages.
Sources of information / references	Asian Development Bank (2008) Indonesia: Coastal Community Development and Fisheries Resources Management Project, Completion Report, Project Number 26006.

Case Study # 6 INT	**ADB /MMAF Sustainable Aquaculture and Poverty Reduction**
Issue	Notes
Title of project	Sustainable Aquaculture Development for Food Security and Poverty Reduction Project
Funder of project	Asian Development Bank
Implementer / partners	Ministry of Marine Affairs and Fisheries (MMAF) District governments
Investment	US$44.6 million (Loan US$31.6 million, Indonesian Government US$9.49 million, beneficiaries US$3.52 million)
Date/period of project	2007 – 2013
Location(s)	Langkat district, North Sumatera; Ogan Komering Ilir, South Sumatera; Kawawang and Sumedang district West Java; Buton, South Sulawesi
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	The goal of the programme was to reduce poverty and increase food security, through creation of employment in community-based aquaculture, with outcome targets (over 6 years): - Food and non-food HH expenditures and fish consumption to increase by 20% - Increase production, productivity and range of products by 30% - Incomes of fish farmer HHs and communities increased by 20% - Incomes of 14,000 poor HHs to increase above the poverty line
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability*	The driving narratives of the programme were food security and poverty reduction, based on increasing productivity in small-scale aquaculture. The programme aimed to develop small-scale and low-cost aquaculture that was environmentally friendly and could be easily replicated by fish farmers' organisations and small- to medium-scale private entrepreneurs.
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	Target beneficiaries were coastal fishers and farmers in the identified districts.
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	The Project Completion Report ("PCR") reports that gender was mainstreamed in project planning and implementation, with women actively targeted, and empowered by their participation, in certain activities.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The livelihood activities were both alternatives and enhancements. The activities aimed to improve production of major types of aquaculture systems (both existing and new), and to improve post-harvesting, processing and marketing. The livelihood assets being built were: - Human capital (knowledge and skills in aquaculture and mariculture, harvest and processing) - Social capital (improved relationships with extension services and development of community-based aquaculture enterprises) - Natural capital (rehabilitated fishponds, replanted mangroves) - Financial (improved access to financing schemes) The programme also aimed to support improved delivery of extension services as well as a range of within-government capacity building and programme development.
Activities implemented *Describe the key activities or actions undertaken*	Under Component 1 "Aquaculture Production Enhancement": - 14,585 poor HH were organised into community-managed aquaculture enterprises - 3,277 ha fish ponds were rehabilitated

Case Study # 6 INT	**ADB /MMAF Sustainable Aquaculture and Poverty Reduction**
Issue	Notes
	- 300 mariculture cages were established and managed - 150 brackish water and mariculture demonstration units were established - 500 ha seaweed culture facilities were developed - 45 ha freshwater fishponds rehabilitated or established - 100 freshwater demonstration facilities established - 20 freshwater and 4 mariculture hatcheries and 10 nurseries established - 150 water supply facilities provided - 38 kilometers of access roads and pathways rehabilitated Under Component 2 "Aquaculture Support Services": - 930 community groups and 139 women's groups were served by extension services - 300 extension activities delivered - 50% of project beneficiaries were provided access to financing schemes - Fish post-harvest and economic losses reduced by 30% and value of cultured fish and other products increased by 20% - Water quality improved
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.?)*	The PCR reports that HH surveys showed a 60% increase in production and productivity of fish and 84% of other aquatic products, while HH income improved by 70%. Fish consumption is reported to have increased by 83%, while poverty incidence declined by between 5 and 9 % in programme districts. Women are reported to have constituted up to 25% of total project beneficiaries, and 92% of processing groups, such that their opportunities to engage in livelihood enterprises and improve family income were greatly increased. An economic analysis of a sample of aquaculture enterprises developed showed that they were economically viable.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	Numerous planned activity targets were not met, including engagement with women's groups. Pond water quality also declined in some districts. Aquaculture and mariculture enterprises, while performing well at project conclusion, were noted as vulnerable to risks of production over supply and the onset of diseases. Thus, on-going support may be required.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	The project was evaluated in accordance with ADB's evaluation framework, with indicators as outlined in the project logical framework.
Lessons/learnings	- Strong institutional capacity development, coordination and teamwork supported implementation - Women were empowered by gender mainstreaming

Case Study # 6 INT	**ADB /MMAF Sustainable Aquaculture and Poverty Reduction**
Issue	Notes
	- Project goals were over-ambitious initially and were scaled back considerably during implementation
Opportunities	
Sources of information / references	ADB (2015) *Indonesia: Sustainable Aquaculture Development for Food Security and Poverty Reduction Project*, Validation Report PVR-430, Independent Evaluation Department.

Case Study #7 INT	**World Bank / MMAF Coral Reef Rehabilitation and Management**
Issue	Notes
Title of project	Coral Reef Rehabilitation and Management Project (COREMAP) - Phase II
Funder of project	World Bank Global Environment Facility
Implementer / partners	Ministry for Marine Affairs and Fisheries Indonesian Institute of Science Directorate General of Forest Protection and Nature Conservation District and local government Local NGOs Partner funders included Asian Development Bank and AusAID
Investment	US$53.3 million (including US$30 million loan from World Bank)
Date/period of project	2005 - 2011? (6-year acceleration phase)
Location(s)	Selayar, Pangkep, Sikka, Buton, Wakatobi, Biak and Raja Ampat
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	The livelihood issue being addressed is impoverishment of coastal small-scale fishers and degradation of natural resources. The programmes goals include: - 10% increase in income - 70% of beneficiaries perceive program as having a positive impact on their welfare - 10% of reefs in participating districts are collaboratively managed marine conservation areas
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability*	COREMAP is a 15-year programme aiming to protect, rehabilitate and achieve sustainable use of coral reefs and associated ecosystems in Indonesia which will, in turn, enhance the welfare of coastal communities. COREMAP was planned to be implemented in three phases, a 3-year initiation phase, a 6-year acceleration phase and a 6-year institutionalisation phase. The 6-year acceleration phase aimed to empower and support coastal communities to sustainably co-manage the use of coral reefs and associated ecosystem resources, which will revive damaged or preserve intact coral reef ecosystems and in turn enhance the welfare of these communities. Phase II intended to scale-up activities piloted in Phase I. The driving narrative of the programme was community-based management, which reflects the recognition that government agencies cannot effectively manage the extensive coral reef areas without the close involvement of coastal villages. It was envisioned that community-based management will contribute to poverty alleviation through improved condition in coastal resources (e.g. fish biomass) and development of alternative income groups.
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	The programme targeted 357 communities in 7 districts. These communities were chosen because they were characterised by pervasive poverty and extensive degradation of coastal resources, as well as highly dependent on small-scale reef fishing for their livelihoods (and often used destructive and illegal fishing methods).
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	The programme's design did not incorporate a clear gender analysis; however, one of the community motivators in each community was required to be female and women's groups were established in each community. However, the role of these groups was not clearly defined, and they were often merged with the post-harvest production groups which received equipment and training to make boiled fish paste or fish cakes.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The programme aimed to engage and empower communities in management of coral reef resources. Activities centered on development of increased knowledge of coral reef resources and their management, and then the development of community-based management plans and associated components such as monitoring, control and surveillance ("MCS"). The livelihood assets being built were: - Human capital (increased knowledge of coral reef resources and their management)

Case Study #7 INT	**World Bank / MMAF Coral Reef Rehabilitation and Management**
Issue	Notes
	- Social capital (development and engagement in community groups to support coral reef management) - Financial (access to revolving fund to support group or individual livelihood activities)
Activities implemented *Describe the key activities or actions undertaken*	Component B "Community based and collaborative management": - Set up coral reef management committees in each village that supported four community groups – production, gender, conservation and monitoring, control and surveillance - Prepared and implemented community-based coral reef management plans (357 developed and 251 implemented) - Provided village grants for building small-scale infrastructure and providing entitlements - Established community-based revolving funds for alternative income generation (AIG) activities Component C "Public awareness, education and sea partnership": - Public awareness campaign - Education programs and education materials for formal primary and secondary education curriculum - Sea Partnership scholarship program for secondary, university and graduate students
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.)?*	The programme is said to have enhanced community welfare through increases in HH income and access to better community-based infrastructure. The income of beneficiary group members who received funds from the revolving fund improved by 20%. There was increased recognition of the importance of healthy coral reef ecosystems, with 75% of respondents acknowledging that healthy coral reefs were key to their livelihoods. There was a 60% decrease in detection of illegal and destructive fishing in project districts, with greater incidence of illegal activities being successfully prosecuted (although this was not the case in Selayar).
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	Alternative income generation projects had limited impact, providing supplemental income rather than an opportunity to exit the fisheries sector. Some of the AIG activities were more lucrative (e.g. seaweed) but had greater risk, and required additional training in farming techniques and access to improved cultivars. The maintenance of community institutions created by the project is noted to require additional post-programme support from government. This is noted to be the case particularly where financial benefits are slow to flow from project activities, including alternative income generation activities, or where increased fish-biomass doesn't eventuate. The lack of profitable alternatives may see fishermen return to destructive harvest practices. Managing the complexity and scope of the project was a significant challenge. Some project indicators were inadequate to measure the project impacts, particularly ecological indicators.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	The programme was evaluated using the World Bank Operating Evaluation Department's rating system which includes relevance, efficacy, efficiency, sustainability, institutional development impact and outcomes.

Case Study #7 INT	**World Bank / MMAF Coral Reef Rehabilitation and Management**
Issue	Notes
Lessons/learnings	- Supporting organisational structure and reinforcing institutional arrangements at all levels of government and strong ownership by local stakeholders are key to decentralised collaborative management - Alternative income generating activities must be accompanied by appropriate technical and financial support - Awareness raising, and education are a low-risk, cost effective way of strengthening support and ownership of project objectives and improving outcomes (but need appropriate design to convert awareness into behaviour change) - Revolving funds may not be the most appropriate mechanism to channel financing for livelihood transformation
Opportunities	- Several villages outside of programme areas are said to have started copying the community-based management model promoted by COREMAP - The Ministry of Education formally adopted the COREMAP-II education curriculum and textbooks, ensuring high quality materials are available to support improved learning activities in primary and secondary schools
Sources of information / references	World Bank (2012) *Implementation Completion and Results Report – Republic of Indonesia Coral Reef Rehabilitation and Management Project Phase II*, Indonesia Sustainable Development Unit, Sustainable Development Department.

Case Study #8 INT	**WorldFish/MMAF Lombok small-scale fisheries**
Issue	Notes
Title of project	Implementing an ecosystem approach to fisheries (EAF) in small-scale tropical marine fisheries
Funder of project	European Commission
Implementer / partners	World Fish MMAF – Research Centre for Marine and Fisheries Socio-Economics, Bogor Agricultural University – Centre for Coastal and Marine Resources Studies
Investment	EU$330,000
Date/period of project	December 2011 to December 2014
Location(s)	Jor Bay and Gili Matra, Lombok
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	The goal of the programme was to pilot implementation of an ecosystem approach to fisheries management ("EAFM") to improve small-scale fisheries management and enhance their contribution to poverty reduction.
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability*	The programme is driven by a co-management approach, aiming to strengthen partnerships between local communities and local and district government to support improvement, rather than replacement, of existing coastal resource management practices. The pilot programme aims to revive traditional regulations for managing natural resources supported by the delivery of training, building of synergies with other projects, and development of EAFM action plan.
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	Members of coastal communities who rely on coastal habitats as an important source of livelihoods and nutrition; as well as managers of MPAs and fisheries, NGOs, national and local governments in Indonesia.
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	The gender approach adopted by the project was informed by WorldFish's Transformative Gender Strategy. However, the project documentation does not clearly elucidate how women were involved nor document transformative benefits. In Indonesia, women were involved in training on processing/marketing and financial management.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The livelihood activities are enhancement activities, seeking to increase stewardship of coastal resources and their management. The livelihood assets being built are: - Human (increased knowledge of coastal resource management, empowerment via support for traditional management processes and systems, increased skills (design of squid attractors/FADs)) - Social (improved cooperation between communities and local and district government,) - Natural capital (improved coastal resource condition)

Case Study #8 INT	**WorldFish/MMAF Lombok small-scale fisheries**
Issue	Notes
Activities implemented *Describe the key activities or actions undertaken*	The following activities have been implemented: - Awareness raising and workshop on EAFM development - Mangrove replanting - Training in construction and deployment of squid attractors and shallow water fish aggregating devices (FADs) - Development of rules and regulations based on revitalised existing management structures (traditional awik-awik regulation of natural resources) - Development of links with KIMBis project which has a pilot centre providing extension services to fishing communities for provision of capacity development on post-harvest processing and marketing, household financial management, aquaculture (grouper floating cages), maintenance of fishing boat equipment
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.)?*	Project activities in both sites have actively engaged communities, and in Jor Bay have strengthened the awik-awik traditional regulation for managing fisheries.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	It is noted that the effectiveness of newly introduced management practices is yet to be validated and accepted by the local communities and that further capacity building is likely to be required. Further a train-the-trainers approach was used but the trained trainers are also likely to required further support and training material to feel confident to act as trainers. Monitoring report notes that there is a risk that the roll-out of wider EAFM plans (planned to be scaled up and implemented nationally) and establishment of MPAs are expected to create conflicts among affected communities.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	The programme was evaluated according to the EU's "traffic light" system (very good – serious deficiencies) in relevance, quality of design, efficiency, effectiveness, impacts to date, sustainability to date, The Monitoring Reports note that there are no indicators or set targets to facilitate the assessment of project effectiveness. This is challenging, especially where one of project goals is behavioural change.
Lessons/learnings	- Engage with community groups beyond the primary target fishers, to increase awareness - Maintain communication links between funders and implementing partners - Gender strategies for regional programmes need to be contextualized
Opportunities	- Piloted participatory diagnosis and adaptive management (PDAM) framework offers a model which could be applied in other communities
Sources of information / references	European Commission (2014) Monitoring Report MR-146965.01, External Cooperation Programmes; European Commission (2014) Monitoring Report MR-146965.02, External Cooperation Programmes; European Commission (2014) ROM Background Conclusion Sheet – Indonesia, MR-146965.02; Adhuri, Dedi S (Indonesia project coordinator)

Case Study #9 INT	**FAO / MMAF Regional Fisheries Livelihoods**
Issue	Notes
Title of project	Regional Fisheries Livelihoods Programme for South and Southeast Asia (RFLP)
Funder of project	Kingdom of Spain
Implementer / partners	Food and Agriculture Organisation of the United Nations (FAO) Ministry of Marine Affairs and Fisheries – Directorate General of Capture Fisheries District Marine Affairs and Fisheries Agency (DKP) Local NGOs
Investment	US$2.02 million (Indonesia component)
Date/period of project	2009 – 2013
Location(s)	Four districts (Kupang Municipality, Kupang District, Alor District and Rote-ndao District) of Nusa Tenggara Timur.
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	Livelihoods of coastal small-scale fishers are dependent on increasingly depleted and degraded resources, due to overcapacity, resource access conflicts and inadequate resource management. The expected outcome was "strengthened capacity among participating small-scale fishing communities and their supporting institutions towards improved livelihoods and sustainable fisheries resources management".
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability.*	The programme's approach was to facilitate grass roots effects of improved fisheries management and livelihoods development through concrete interventions in selected target communities and coastal areas. The driving narrative was to increase resilience and reduce vulnerability of the targeted communities, with some focus on supporting improved fisheries market chains.
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	The primary stakeholders and target beneficiaries were: Coastal fishers, processors, traders and their families, their organizations and their communities, including local authorities; Government organizations and institutions responsible for the administration, management and development of coastal fisheries at local, district/province and national levels. The project's Terminal Report states that 3,215 people (640 women (19.9%)) took part in capacity building activities. Participants comprised government staff from both central and local levels, community members and NGO staff.
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	Gender is described as a cross-cutting issue and gender is said to have been considered in the planning and design phase for all activities. A post-programme evaluation noted that although women's participation was high there has been no change in the level of participation of women in community and co-management activities. Alternative and livelihood enhancement activities are noted as having empowered women's position in their domestic and productive roles and contributed to improvements in material well-being.

Case Study #9 INT	**FAO / MMAF Regional Fisheries Livelihoods**
Issue	Notes
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The activities mostly supported existing livelihoods strategies, although some of the processing groups developed new livelihoods strategies through fish-based food processing. The livelihood assets being built were: - Human capital (increased knowledge of coastal and natural resource management, safety at sea, hygiene and sanitation practices); - Social capital (formation or strengthening of village resource management committees and processing groups); - Physical capital (provision of safety at sea equipment to support safer harvesting practices, provision of cold-chain storage equipment, improvements at major fish landing site); and - Natural capital (replanting of mangroves areas)
Activities implemented *Describe the key activities or actions undertaken.*	The activities implemented included: Fishery co-management: - Training of trainers (ToT) training in fishery co-management and habitat restoration and marine coastal environment; - Piloting of a community-based marine protected area in eight villages, supported by developing of village regulations on marine-coastal resource management, forming or revitalising Community Control Groups, and facilitating greater participation in village development planning and budgeting processes; and - Boat registration program and computerisation of records. Coastal habitat restoration: - Mangrove replanting at 3 sites totaling 10 ha; - Community awareness training in several villages, accompanied by activities such as beach clean-ups and student competitions; Safety at sea: - Training of trainers (TOT) training in accident reporting; - Training for boat masters to national standard; - Training on sanitation and health issues; and - Distribution of boating safety equipment such as life jackets, EPIRBs. Post-harvesting and marketing: - Training for 20 processor groups in post-harvest fish-based food production, along with provision of equipment, assistance in obtaining health certification, development of packaging and marketing; and - Improvements to cold chain through provision of cool boxes and improvements at major fish trading centre including increasing access to ice. Community livelihoods: - Delivery of entrepreneurship and life-skills training for 100 youth (40 girls), in areas such as seaweed, catfish, mechanics, fibre glass, and computer training; and - Provision of 11 bio-gas units to pig-farming households. Access to micro-finance: - Training in financial planning and management for 101 community members (53 women); and - Community savings-lending system established in 2 villages.

Case Study #9 INT	**FAO / MMAF Regional Fisheries Livelihoods**
Issue	Notes
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.?)*	Women's processing groups are reported to have increased their incomes, enabling them to pay for school fees, support household improvements and save money. The programme linked local processing groups with regional and national local foods promotions programmes, enabling one female processor to significantly expand operations, employ 10 women and reach the national market. Participants in training of trainers' workshops were linked with further programme activities, so that they gained practical experience.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	The programme was reduced mid-way through due to economic crises in the funding nation, resulting in reduced staffing levels and cancellation of numerous planned activities. The programme attempted to use local contractors for training activities but notes that service delivery was sometimes poor, resulting in reductions in potential outcomes. The TR notes that many of the activities targeted at the government (e.g. creation of websites, fish landing and market information, vessels register) were not in use at the completion of the project. It is noted processing groups will require on-going support for livelihoods activities centered on post-harvest processing. The TR notes the programme's contribution to the creation of the Savu Sea Marine Protected Area; however other on-going work records the absence of community awareness and participation in creation of the MPA and associated zoning plans.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	The programme's evaluation strategy included a baseline survey however implementation problems meant that this was a lengthy, difficult and high-cost activity and the baseline information collected was not used to inform planned programme activities or assess the programmes' impact. A logical framework with indicators was developed and activities were reported on a monthly basis using a simple progress measure. Group discussions, in-depth interviews and site observations facilitated recording of outcomes.
Lessons/learnings	The following key lessons are noted: - Activities promoting co-management must be integrated with national strategies and receive sufficient time and commitment - Basic living requirements must be addressed (e.g. access to clean water, sanitation) before higher level activities can be implemented - Scoping of natural resource based livelihood activities must include an assessment of environmental impacts, while locally-based scoping of non-fisheries alternative livelihoods is required - Women assumed the burden of new livelihood activities (e.g. post-harvest processing) - There is a need to develop capacity in "soft skills" that support participatory processes (e.g. group leadership, community cohesion, conflict resolution) - Capacity building is a long-term and hands-on process - Capacity building in financial literacy is required to support households manage budgets and reduce dependence on money lenders and middle-traders

Case Study #9 INT	**FAO / MMAF Regional Fisheries Livelihoods**
Issue	Notes
	- Project activities were spread over a wide geographical base which made in-depth mentoring of groups difficult and the project required a longer timeframe for effective implementation
Opportunities	The project adopted a training-of-trainers approach, so there is potential for trainers to continue sharing knowledge within communities after the project is completed.
Sources of information / references	RFLP (2013) *Programme Terminal Report, Regional Fisheries Livelihoods Programme for South and Southeast Asia* (GCP/RAS/237/SPA), Field Project Document 2013/2; RFLP Indonesia (2013) *Project Terminal Report – RFLP Operation in Indonesia*, *Regional Fisheries Livelihoods Programme for South and Southeast Asia* (GCP/RAS/237/SPA), Field Project Document 2013/INS/04; Fitriana, R. (2012) *Gender impact assessment of RFLP interventions in Nusa Tenggara Timur, Indonesia*, *Regional Fisheries Livelihoods Programme for South and Southeast Asia* (GCP/RAS/237/SPA), Field Project Document 2012/INS/; Fitriana, Ria (personal communication).

Case Study #10 INT	**IFAD / MMAF Coastal Community Development Project**
Issue	Notes
Title of project	Coastal Community Development Project
Funder of project	International Fund for Agricultural Development[19]
Implementer / partners	Ministry of Marine Affairs and Fisheries District and Provincial Marine Affairs and Fisheries Agencies Project communities to establish locally elected project working group of 5 persons, 2 of which must be women
Investment	US$43.2 million (*IFAD loan US $24.2 million, IFAD grant US $2 million, Spanish Food Security Trust Fund loan $US7.8 million, Indonesian Government contribution US$7.1 million, beneficiary contribution US$2.1 million*[20])
Date/period of project	*October 2012 –December 2017*
Location(s)	Selected villages in Merauke and Yapen, Papua; Maluku Terggara and Kota Ambon, Maluku; Kota Ternate, North Maluku; Kota Bitung, North Sulawesi; North Gorontalo, Gorontalo; Kota Parepare and Kota Makassar, South Sulawesi; Lombok Barat, West Nusa Tenggara; Kota Kupang, East Nusa Tenggara; Kubu Raya, West Kalimantan
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	Fishermen comprise 25% (7.9 million) of the total number of Indonesians living in poverty, and live in 10,000 coastal communities across 357 districts. Fishermen in some communities are facing increasing difficulty to make a good return from their catch, due to poor access to markets and in some cases declining catch level. In some communities destructive fishing practices and overfishing are having negative effects on resources. The project goal is "reduction in poverty and enhanced, sustainable and replicable economic growth among the active poor in coastal and small island communities". The project's development objective is "increased household income for families involved in fisheries and marine activities in poor coastal and small island communities". Corresponding logical framework indicators are: - 9,900 additional HH with improvement in HH assets ownership index - 40% reduction in prevalence of child malnutrition - Value of marine and fisheries products sold by participating HH has increased by an average of 30% - 13,200 additional HH for which food security have improved Targeted villages were selected on basis of having at least 20% of households below the poverty line and as being "active poor", which are said to be able to make effective use of project investments through a market-based approach, demonstrated through active involvement in past government initiatives (specified as PEMP/PNPM programmes).
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability*	The project combines a community-empowerment and market-based approach, seeking to alleviate poverty in targeted villages. Project activities at the village level are described as flowing from a demand-driven participatory planning approach focused on marine-based economic development and working through groups and associations within that community. This involves preparation of a 'village resource inventory' and 'village fisheries and marine plan' which will prioritise project activities. The project's goals include increasing food security, but there are no project activities specifically addressing this and it is assumed that generation of increased incomes will result in increased food security and reduced child malnutrition.

[19] *IFAD is a specialised agency of the United Nations, established as an international financial institution in 1977. IFAD's goal is "to empower poor rural women and men in developing countries to achieve higher incomes and improved food security" (www.ifad.org/en/who/tags/1675250).*

[20] *Beneficiary contributions are noted to include land, labour and materials.*

Case Study #10 INT	**IFAD / MMAF Coastal Community Development Project**
Issue	Notes
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	The project aims to directly or indirectly benefit 320,000 people in 70,000 households with fishing and marine-based livelihoods, in 180 villages (15 selected from 12 districts in 9 provinces). The MTR states that they have reached 67.8% of the project target for direct beneficiaries (9,900 of 19,800 HH).
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	The project does not have a specific gender focus; however, it includes the following targets: 30% of community facilitators should be women, 30% of participants in village groups should be women and 20% of all enterprise groups should be women's groups. A gender-mainstreaming module is included in training for community facilitators. The MTR notes that capture fisheries are the most profitable economic activity and dominated by men, whereas through the project women have started participating in fish-based food processing.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The livelihood activities are primarily livelihood enhancements, aimed at increasing income from existing marine-resource based activities through improving value chain infrastructure. Women's participation in processing groups is a new livelihood activity. The livelihood assets being built are: - human capital (knowledge acquisition); - social capital (formation of groups, marketing networks and cooperatives); - physical capital (improvements in basic infrastructure and provision of equipment to facilitate harvesting and processing of marine resources); and - natural capital (through improved awareness and management of marine resources)
Activities implemented *Describe the key activities or actions undertaken*	Under Component 1 "Community Empowerment, Development and Resource Management": - 181 village working groups, 181 infrastructure groups, 180 community-based coastal resource management ("CBNRM") groups, 21 savings groups and 1607 enterprise groups were formed;108 village information centres were built, for project and wider community uses. CBCRM groups are working towards village data collection and inventories and conservation activities based on the specific needs of different villages (e.g. mangrove planting, fisheries surveillance), with subsequent support to be provided for traditional/customary arrangements, enactment of village/local regulations and creation of no take zones to feed into later developed integrated coastal management plans. Of the enterprise groups, 53% are capture fisheries groups, 21% are processing groups (including 3 handicraft groups), 15% are aquaculture and 11% are marketing groups. The MTR notes that many members of the processing groups, the majority of whom are women, had no prior processing experience and have developed products and market linkages which have created new livelihood opportunities. They are producing basic food items like fish balls, crackers, shredded fish and salted or smoked fish. Aquaculture groups are farming freshwater catfish, marine fish cage culture, seaweed culture. The JRMR states that approximately 70% of enterprise groups are financially viable. Infrastructure projects include jetty/boat mooring, fish drying facilities, water supply, surveillance tower, fish smoking house, public toilets, drainage and fish markets. Under Component 2 "District Support for Marine-Based Economic Development", 63 infrastructure facilities have been completed, comprising buildings (e.g. production or packaging houses, shop outlets, ice-plants), sets of equipment (e.g. processing, packaging, ice-making), and small number of transport facilities (e.g. vehicles, motor tri-cycles). However, use of infrastructure facilities varies, with some unused and others underutilized. Training has been provided to enterprise groups to improve capacity for production and marketing.

Case Study #10 INT	**IFAD / MMAF Coastal Community Development Project**
Issue	Notes
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.)?*	The project is on-going but to date the MTR reports: - a 50% reduction in the proportion of HH in the poorest quintile, with HH in the poorest and average quintiles presumed to have moved to the next highest quintile; - a 57.5% increase in average monthly income among fisheries businesses; and that - project beneficiaries' income was 56.2% higher than non-beneficiaries; and - a decline in the proportion of HH who were not able to provide three meals a day and a 7% reduction in chronic child malnutrition (although there was a 4% increase in acute malnutrition). The MTR notes an increase in asset ownership and savings, increased food security and an improved natural resource base, as well as a trend towards diversified income sources, lesser dependence on money-lenders and increase in beneficiaries providing employment.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	A number of issues are identified in the MTR which affect the sustainability of project interventions. Community groups (village working groups, infrastructure groups and CBNRM groups) are not receiving economic benefits for their contributions, resulting in sub-optimal contributions because they consider this unjust. Further, CBNRM group have limited legal basis to enforce fisheries management rules. Community facilitators (TPDs) appointed to mobilise and support activities and groups within communities, often lack the required technical skills training (such as business management, processing, marketing, aquaculture, and resource management methodologies) to ensure their effectiveness. The financial performance of enterprise groups is very variable, with some groups not appearing financially viable, and hindered by human capacity limitations. A large share of enterprise and infrastructure funds have gone to capture fishing groups, funding new vessel hulls, fishing gear and/or engines. Few resources have been directed towards more selective gears, smaller vessels and engines to reduce fishing pressure, so there is potential for creation of localised over-fishing of both pelagic and demersal species. The value chain approach adopted aimed to create/link third party operators to manage infrastructure funded by the project through which increased harvests would be processed/marketed. However, many of these third parties (comprising private sector (25%), state enterprises (15%), cooperatives (20%) and village groups (40%) are newly formed and lack experience, skills and access to funds. MoUs have been created between the third-party operators and enterprise groups. The MTR noted the difficulty in operationalising the project because of its broad scope and complexity. The JRMR reports an apparent threat of reduced funding from MMAF< despite project agreement commitments, which will affect sustainability of outcomes and poses a reputational risk at multiple project levels.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	The project was evaluated using IFAD's performance assessment methodology. This is based on project activities' progress towards or meeting quantitative indicators described in the project's logical framework.
Lessons/learnings	There is a need to enhance beneficiaries understanding of the importance of sustainable management of natural resources, and link HH participation in non-revenue generating groups with HH participation in enterprise groups to facilitate a more holistic understanding.

Case Study #10 INT	**IFAD / MMAF Coastal Community Development Project**
Issue	Notes
	There is a need for greater integration of resource assessments and asset distribution to avoid facilitation of over-capacity. **** There is a need for greater coordination and integration of operationalisation of value chain components, and the use of newly formed cooperatives may require additional support.
Opportunities	The project is being expanded to 72 additional villages in its second phase and there are opportunities for improved selection of products by processing groups, as well as activities such as exchange visits, to enhance outcomes. The MTR notes that the village information centres could be used to deliver nutrition information and training.
Sources of information / references	IFAD (2017) Coastal Community Development Project – Supervision Report Mission May 2017 – Joint Review Mission Report, Asia and the Pacific Division, Programme Management Department; IFAD (2015) *Coastal Community Development Project – Mid Term Review Report*, Asia and the Pacific Division, Programme Management Department; IFAD (2012) *Republic of Indonesia Coastal Community Development Project – Design Completion Report*, Asia and the Pacific Division, Programme Management Department.

Case Study #11 INT	**IMACS – Indonesia Marine and Climate Support**
Issue	Notes
Title of project	Indonesia Marine and Climate Support Project (IMACS)
Funder of project	USAID
Implementer / partners	Ministry of Marine Affairs and Fisheries (MMAF) Provincial and district marine affairs and fisheries offices (DKP) Chemonics International with PNCI, Coastal Resources Centre of the University of Rhode Island and RARE WWF-US with WWF-I, CI, TNC, CTC and WCS NOAA University partnership program
Investment	USD $31.9 million (USD$1.4 million small grants program)
Date/period of project	2010 – 2014
Location(s)	10 districts in Southeast Sulawesi and West Nusa Tenggara
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	IMACS was designed to enhance sustainable fisheries management using an ecosystem-based approach, and coastal community resilience and climate change adaptation. IMACS principally supports MMAF in increasing capacity in a number of key areas, namely: - support for national strategic planning; - combatting illegal, unreported and unregulated (IUU) fishing, including through improved community surveillance; - support for coastal and small island planning and zonation, including establishment of district regulations; - curriculum development and training for MMAF staff; and - improved collection of fisheries data and statistics, including through development of the Indonesia Fisheries Information System (I-Fish). The main components of the program with immediate direct livelihood impacts was the Coastal Community Resilience component, a climate change assessment tool for coastal communities, and a small grants programme.
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability*	The Marine Resource Program under which IMACS sits is based on the premise that improved management of Indonesia's marine resources and marine ecosystems will result in long-term sustainability of production of those resources and greater protection of the marine ecosystems whose processes underpin that production. The programme's driving narrative, as reflected in MMAF strategic planning documents, is centred on improving knowledge to support the sustainability and productivity of fisheries value chains.
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	MMAF was a major beneficiary of capacity building activities. The Coastal Community Resilience component's targets were: - 10,000 communities and stakeholders with increased capacity to adapt to the impacts of climate variability - 65 communities adopt strategies to enhance marine resources, community security, supplement economic livelihoods or diversity income opportunities These communities were selected on the basis of MMAF and district level priorities.
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	The project does not have a targeted gender component; however, women participated in community-level project activities.

Case Study #11 INT	**IMACS – Indonesia Marine and Climate Support**
Issue	Notes
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The Coastal Community Resilience Component implemented the "I-CATCH" community-based climate change vulnerability assessments and climate adaptation plans in 100 villages, with the support of locally-based NGOs. Small grants supporting facets of climate change adaptation and coastal community resilience were awarded and implemented through locally-based NGOs. The small grants were awarded based on three characteristics: robust economies and environmentally friendly livelihoods, ecosystem health and resilience, and strengthened social networks. The livelihood assets being built were: - Human capital (increased awareness and knowledge of natural resource management and climate change; increased knowledge of alternative livelihood components); - Natural capital (rehabilitation of mangrove areas, and improved management of near-shore fisheries resources); and - Social capital (increased engagement with local and district governments).
Activities implemented *Describe the key activities or actions undertaken*	One hundred community-based climate change vulnerability assessments and climate adaptation plans were developed. Twenty-six small grants, implemented over a four to 16-month period, supported activities such as: - Community awareness and training in mangrove replanting, with areas of up to 15 ha replanted; - Training in seaweed farming; - Training in post-harvest seaweed and fish processing (e.g. making fish balls, seaweed crackers), as well as provision of required equipment; - Provision of fish-drying machines; - Development of business plans and marketing agreements between new seaweed farming enterprises and buyers; - Training in shell handicraft production; - Training and support for small eco-tourism enterprises, including provision of basic furniture packages and development of service standards booklet for homestay operators and associated businesses (e.g. basic hygiene and sanitation requirements, tour guiding, bird watching, safe boating, emergency response); - Training in salt production using RAMSOL method; and - Formalisation of customary natural resource management practices (e.g. awik-awik) in district laws. All activities were supported by 'socialization' exercises which assisted stakeholders (community members, local and district government, NGOs) to develop shared awareness and goals.
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.)?*	Some members of newly formed enterprise groups increased their collective and individual incomes. Livelihood activities focussed on locally available resources, built upon customary knowledge base, and relied upon local suppliers, thus having an economic multiplier effect by concentrating resources within communities. A large area of mangroves were replanted (190,000 seedlings), improving coastal protection and providing habitat.

Case Study #11 INT	**IMACS – Indonesia Marine and Climate Support**
Issue	Notes
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	I-CATCH was not aligned with the local government development process called MUSRENBANG, which is a bottom-up, participatory planning and budgeting process where communities work with local governments to identify near-term priorities and resources. There was therefore limited uptake of I-CATCH identified actions, attributed to lack of human resource and financial capacity at the village or district government level (as well as failure of the programme to allocate budget to support these activities). Further, additional support is noted as required for preparation of spatial planning maps and coastal zonation plans.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	The project was originally evaluated against the project logical framework. An independent evaluation was also undertaken, evaluating the programme at three levels – individual outputs (outputs achieved), component (results achieved) and overall (strategic outputs). It found that the effectiveness of the activities in achieving sustainable fisheries, concrete biodiversity outcomes or increased resilience to climate change is questionable. There were no indicators or supporting programs in place to measure biodiversity outcomes. Further project-level activities are not strategically well connected to government agency processes, limiting their effectiveness and sustainability and contribution to capacity building. It also notes that many of the small grants were not aligned with overall project goals.
Lessons/learnings	- Engage with government partners early and often in designing and focusing work, and agree on roles, responsibilities, resources and performance metrics and review and validate these periodically. - Know and link programme activities closely to government schedules. - Work towards using a two-tier approach to gaining acceptance of new initiatives. - Identify champions. - Conduct comprehensive stakeholder mapping, of individuals as well as organisations.
Opportunities	Many of the project level activities are described as developing pilot/template documents or processes, which could be easily adapted or adopted in other locations across Indonesia.
Sources of information / references	Morgan, G., Darmawan and Taurusman, A.A. (2013) *Evaluation of the USAID-MMAF Marine Resource Program (MRP), Indonesia*; Chemonics International Inc (2015) *Improving Sustainable Fisheries and Climate Resilience – Indonesia Marine and Climate Support (IMACS) Project Final Report*, Prepared for USAID; USAID (undated) *IMACS Grant Profiles*.

Case Study #12 INT	**TNC/GoA Sustainable Use Planning**
Issue	Notes
Title of project	Coastal marine planning and livelihood development in the Rote-Ndao district of East Nusa Tenggara Province, Indonesia
Funder of project	Australian Government The Nature Conservancy
Implementer / partners	The Nature Conservancy Local NGO and University partners
Investment	$981,000 AUD
Date/period of project	05 July 2013 - 31 December 2015
Location(s)	Rote Ndao District, NTT
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified.*	The project has four major outputs: - support the production of finer scale coastal and marine spatial planning for Rote Ndao; - pilot project in territorial user rights in fishery management (TURF); - support for marine life cultivation practices; - input for Rote Ndao district tourism planning.
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability.*	The project tried to improve local community mariculture practices of seaweed, mud crab, and/or sea cucumber by enhancing the capacity and knowledge of farmers. - The theoretical basis is to: Increase of quantity and quality of mariculture products from the baseline in 2013 hence increased incomes of farmers in up to 3 (three) selected sites - Improve the practices following the mariculture best practices
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	The primary stakeholders and target beneficiaries were: Coastal fishers and communities, including local authorities; Community groups
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	Gender issue was not explicitly considered in the design of activities. Nonetheless, throughout the project, women were involved in the activity; women participated in the training for seaweed farming The establishment of women's seaweed cooperative group in Oeseli village signifies both the inclusion of women in this project and also the role of FKTA (Rote traditional leaders' forum) that acknowledged the needs of women's participation in conservation and sustainable development.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The activities mostly related to improving seaweed mariculture practices. The livelihood assets being built were: - Human capital, several activities involved training on mariculture and post-harvest practices. - Social capital (formation or strengthening of farming and post harvesting groups); building network with traders.
Activities implemented *Describe the key activities or actions undertaken*	The activities implemented included: - Form new cooperative groups (in Oeseli cooperative group, 55 women members and 33 men, where most women were illiterate; a new seaweed cooperative group in Nggodimeda village) and enhancing knowledge and activities among existing groups

Case Study #12 INT	**TNC/GoA Sustainable Use Planning**
Issue	Notes
	- Community group exchanges to learn successful practice elsewhere in Indonesia. - Facilitate link of community groups with potential industry partners - Subgrant to Customary group (FKTA). The subgrant was used to facilitate seaweed training carried out by a Rote based trainer, as well as basic book keeping training for the cooperatives. It also provided two tons of seaweed seed for the seaweed cooperative groups - In collaboration with UnKris, Kupang, training for business development of seaweed farmers.
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets et.c)?*	The participants in training of trainers increased their knowledge in simple book keeping, understanding simple cost and benefit of farming and improved the culture practices.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	The programme attempted to use local contractors for training activities but notes that service delivery was sometimes poor, resulting in reductions in potential outcomes. It was noted supporting culture and processing groups will require on-going support for livelihoods activities. Two years project was not long enough to conduct on-going support. The presence of facilitator is key in implementing livelihood activities. The beneficiaries could discuss and share experience and failure with facilitators. The facilitators could also act as gate keeper for information and wider network.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	The project was evaluated based on the output achieved.
Lessons/learnings	The following key lessons are noted: - The involvement of women in this project enable the customary group to become aware of the interests and needs of women in Oeseli for example in conservation and sustainable development. - An initiative to improve market access for the mariculture products needs to work with private sectors and traders.
Opportunities	The project involved UnKris in Kupang which has on-going support on Seaweed cultivation, irrespective of the project.
Sources of information / references	TNC (2014) Final progress Report Widodo (2016). Planning for Sustainable Use. Unpublished report Fitriana (2015). Planning for Sustainable Use: Recommendation for Commodities.

Projects implemented by regional non-governmental organisations (NGO)

Case Study #13 NGO	**Blue Forest /Oxfam/CIDA Coastal Field Schools**
Issue	Notes
Title of project	Coastal Field Schools (CFS) Implemented as part of the broader project: Restoring Coastal Livelihoods (RCL) – Building Social and Ecological Resilience in the Mangrove Ecosystem in South Sulawesi
Funder of project	CIDA
Implementer / partners	OXFAM Blue Forests
Investment	CAD $248,653 over 3 years, as part of a CAD $7.7 million 5-year project
Date/period of project	2012 – 2015
Location(s)	RCL locations: Maros, Barru, Takalar and Pangkajene Kepulaun Districts, South Sulawesi Province
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	The goal of the RCL project is to enhance the livelihood security of vulnerable coastal communities, using a multi-stakeholder, collaborative approach to improve management of the intertidal region, including sustainable utilisation of resources and ecological mangrove restoration (EMR). Expected project accomplishments were: - Increasing economic resilience, based on the sustainable use of natural resources - Diversify livelihoods and increased economic activity in the household and community level - Management of coastal ecosystems more effectively by community and government - Enhanced capacity of governments and communities in planning and sustainable natural resources management - Increased access to and control of the coastal resources for men and women in vulnerable communities - Enhanced capacity of men and women in the local market to optimize the system to improve their access to markets - Enhanced capacity of governments and communities in planning and sustainable natural resources management - Improved processes of rehabilitation of damaged mangroves and other coastal ecosystems - Community, government and stakeholders have greater access to the knowledge of social, economic and environmental resilience. CFS, implemented as part of the RCL project, aim to improve livelihoods outcomes primarily by enhancing the sustainability of existing livelihood activities (although some involved livelihood alternative activities such as mangrove-based food production). From Blue Forests' perspective, the implementation of CFS aims to a) develop improved coastal resource management practices, b) empower participants by achieving social gains including increased access, leverage, options, status and critical reflection capacity.
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability*	Coastal Field Schools are based on Farmer Field Schools which were pioneered in Indonesia in the area of integrated pest management. CFS aim to empower participants through reinvigoration of the application of traditional ecological knowledge and practices that have been overshadowed by "modern" extension messages. CFS are based on adult learning concepts and characterised by discovery learning, participant experimentation and group action. CFS have dual objectives: enhancing livelihoods and encouraging natural resources stewardship (focused on mangroves).

Case Study #13 NGO	**Blue Forest /Oxfam/CIDA Coastal Field Schools**
Issue	Notes
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	The targeted beneficiaries of the RCL component were poor and vulnerable members of the target communities. These were identified through discussions with village leaders. The RCL selection criteria specified that at least 75% of participants had to be classed as "poor" and at least 50% women. Additional programmes appear to have had similar criteria for participants.
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	The project had a specific focus on empowering women and the most vulnerable in targeted villages. A pre-project household survey, key informant interviews and focus groups involved collection of gender-disaggregated data on livelihood activities, participation in community activities, as well as participatory mapping of natural resources and ecology surveys.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The activities can be either livelihood enhancements or livelihood alternatives, depending on the subject matter chosen by the participants / implementers.
Activities implemented *Describe the key activities or actions undertaken.*	A total of 71 CFS were implemented by Blue Forests. The CFS have addressed the following issues, as identified through discussion with participants (ie. participants drive the curriculum): - Non-timber forest products (including uses of nypah, bamboo, and *Acanthus illicifolius*) - Organic farming (including bio-intensive vegetable production, and production and use of organic fertilizers) - Organic fishpond production (described as "low external input sustainable aquaculture") - Salt-water tolerant rice / organic paddy - Seaweed production - Bamboo management - Fertiliser production - Silviculture - Forest management learning groups Each school includes development of a seasonal calendar (livelihood activities and resource use/availability), gender awareness training (including mapping out activities of men and women), issue identification, and an agro-ecosystem analysis and continuous monitoring of experimental sites.
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc)?*	A partial budget analysis for organic aquaculture production showed that organic production methods were more economic and increased output (by volume) than methods requiring chemical inputs. However, unclear to what extent these practices continued post- project. The mid-point MSC evaluation found that the RCL project (including through participation in CFS) had resulted in changes at the household level and (village) government levels, where women had gained greater respect from their husbands due to their increased knowledge and ability to earn an income (generally speaking), however women still perform most if not all of their traditional roles within the domestic sphere, meaning participation has added to their work burden. Women also reported greater confidence, enabling them to participate more fully in village development meetings.

Case Study #13 NGO	**Blue Forest /Oxfam/CIDA Coastal Field Schools**
Issue	Notes
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	There is anecdotal evidence that some farmers have returned to pre-CFS activities. For example, farmers who participated in an organic paddy CFS returned to extension-promoted methods of production (i.e. with inorganic fertilisers) because organic inputs were not available for scaled-up activities. There were differing responses to women's participation in CFS, with husbands reported as reticent and supportive of their wives' participation in different locations. Lack of capacity among local NGOs for basic project and financial management; need for project facilitators to receive training in appropriate mangrove replanting rehab techniques.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	An evaluation using Most Significant Change approach was undertaken in March 2012 by Results in Health. This consultancy involved training trainers in the MSC approach and documents some stories from the CFS. Project closing, and evaluation documents have not been reviewed and there is limited documented information available about the actual outcomes of the CFS. Anecdotal evidence indicates positive feedback from participants, however the degree to which participants have continued practicing methods learned during the CFS is unknown.
Lessons/learnings	
Opportunities	The CFS approach, which is widely used as an extension method in agricultural activities in many countries, predominantly in agriculture and integrated pest management (IPM), is argued to empower participants as they jointly identify their own solutions to challenges/problems. The CFS approach has been adopted by some governmental organizations in South Sulawesi, through the train-the-trainer approach.
Sources of information / references	Personal communication – Ratna Fadillah and Ben Brown, Blue Forests; Lukman M. et al. (2010) *Studi Baseline Restoring Coastal Livelihood Di Kabupaten Maros, Pangkejene Kepulauan, Barru dan Takalar, Sulawesi Selatan*, Makassar (in Bahasa Indonesia); Hidayati, Nur and Susilowati, Ima (2013) *Strengthening the MEL system through capacity building in using the MSC Method and trajectory learning for RCL project*, MSC training and training on documentation of changes and analysis of project outcomes, Results in Health.

Case Study #14 NGO	**I-LMMA Up-scaling community-based management**
Issue	Notes
Title of project	Up-scaling community-based fisheries management in Biak and Supiori Regencies (Kabupaten), Papua
Funder of project	Packard Foundation, MacArthur foundation, National Fish and Wildlife Foundation (NFWF), Innovation Small Grant Program – Conservation International (ISGP)
Implementer / partners	Indonesia Locally Managed Marine Area Network (I-LMMA)
Investment	+/- 80 000 AUSD for Biak program for 5 yrs (250 000 AUSD Total expansion program over 5 yrs)
Date/period of project	Start Date: June 2015, planned expansion over 5-year period
Location(s)	Kabupaten Biak Numfor, Papua, Indonesia 2016 subdistricts: Aimando, Padaido, Oridek, Biak Timur, Biak Barat 2017 subdistrict: Biak Utara, Yenures, & Supiori district
Goal of livelihood activity	To develop foundations for livelihood enhancement by providing tools/mechanisms to secure local resource access and management rights, improve sustainable fishing activities (through responsible fishing), improve habitat, and improve return of effort from marine-based livelihood activities. The project is in its 1st phase that includes expansion activities and planning within 2 districts: Biak (2016) and Supiori (2017).
Approach	Co management approaches towards coastal resources are applied. Significant investment is put into developing success cases and using them as vehicles to expand to other communities. These success cases result from I-LMMA's ten-year collaboration with particular communities in the focal area: 'We use the "Melanesian" copy-cat effect – we found that particularly in Melanesian societies [following experience from across the LMMA network] that when people see success and benefits in what their neighbours are doing, they want to adopt it […] they are competitive and want to be better than their neighbours'. I-LMMA's approach to community development, and particularly resource management, draws from manuals and guideline material developed under the international LMMA network (see reference material at the end). From this, practical tools for management are drawn that build on principles of co-management, community resilience and rights-based fisheries management A '5-50-500' expansion strategy is implemented and coordinated centrally from I-LMMA's country program. This involves current activities to be upscaled to 5 focal areas including 50 sites developed into 'learning centres' and 500 villages receiving outreach support * sites were defined as a village ('kampung') In Biak the immediate expansion is planned as: - By end of 2016 have 35 sites with fisheries management programs in place and 60 sites with outreach programs [Biak]; - By end of 2017 add 30 sites with fisheries management programs and 75 sites with outreach programs [Biak and Supiori]
Targeted beneficiaries	Development of critical co-management partnerships target partner communities according to: - Proximity to coast - Small size (+/- 100-200 households) - Socially relatively homogenous - Remoteness (distance from urban centre) - High marine resource dependence - Presence of customary structure (adat) - Having a strong reason to secure management over marine tenure (e.g. ongoing poaching, past experience in losing tenure) - Low income

Case Study #14 NGO	**I-LMMA Up-scaling community-based management**
Issue	Notes
	- A proven interest and enthusiasm to develop further their management authority over NRs - Presence of 'movers and shakers'; with enthusiasm and drive by respected leadership Community target: Through outreach activities in communities, fisheries management approaches are introduced to communities with an open invitation to develop and help implement locally-attuned management tools. The concept is embedded in a management approach that seeks to minimise dependence on technical staff but rather have community leaders lead management with minimal technical mentoring (drawing in part from other learning sites). Within communities, traditional councils form primary entry points for to develop appropriate local institutional capacity.
Gender component and women	Including women in planning and management meetings is important but sensitive at village-level management. Getting women to represent the village outside the village has proven counter effective, as women themselves sought to avoid any participation in out-village activities when urged to join (whereby some women mentioned that they feared that if they commit to in-village responsibilities that may be expected to do so outside the village also). Although involvement of women in out-village activities is low (e.g. outreach and cross-village training), women specific activities were developed following women group meetings and measures were taken to ensure at minimum participation of in-village women in planning and management of the respective village programs. To ensure women's participation in management and leadership: - Village project management teams have to include at least 2 women. - For financial management women are preferred over men, since thus far women have proven more 'trustworthy' and capable of financial management (since they generally also manage household funds). - For all communal meetings invitations are sent out that makes mention for representatives of all social groups in a community to be present, with explicit invitation for members of women groups In HH livelihood PRA surveys during the respective initiation stages of the village programs women's roles were identified and included: - 'Mama Mama Kios': a model for management of finances and management of kiosk enterprises was developed and implemented amongst women groups - Monitoring of resources is carried out by individuals most involved in that particular resource, e.g. In some cases (Auki island) the biological monitoring team for clams is made up of women, because they were identified as being the main collectors of clam species (gleaning). Catch per Unit Effort data monitoring is preferably carried out by women– women tend to stay in the villages and thus are able to monitor catches more consistently (necessary for serial data). Men often have to spend periods at a time in the city which disrupts data collection.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity	Alternative livelihoods training is carried out in new sites by community members from village learning centres from across the network. Particular skills and livelihood activities that are common in a learning centres are transferred in community learning exchange initiatives, using learning tools developed in collaboration with I-LMMA (e.g. seaweed training manual): - Training for the construction of floating fish traps carried out by Tabla Nusu community - Seaweed cultivation training carried out by Tanimbar Kei community - Mapping of marine territory carried out by Meos Mangguandi community (in other focal areas and Timor Leste) - House garden – developing household gardens directly around people's houses

Case Study #14 NGO	**I-LMMA Up-scaling community-based management**
Issue	Notes
Activities implemented	Up to now, the expansion process has expanded activities from 5 to 19 sites in Biak with fisheries management programs. Further expansion follows a stepwise process:1) (outreach) – developing awareness through facilitated communal meetings in 'new' communities, involving I-LMMA staff and representatives from learning centre sites: - Outreach activities make use of facilitation tools including 'how to create your LMA?' manual and a 'Do it yourself' picture book. 2) (fisheries management) – identifying customary management potential and strengthen traditional leadership structure: - Secure tenure systems through mapping traditional fishing boundaries (for use in gaining political recognition) - Develop local regulations on natural resource management (pengelolaan sumber daya alam PSDA – with political recognition from subdistrict government) - OUTPUT: 'peraturan kampung' as a means to accept and legitimise Adat authority (PSDA falls under village administration regulations) 3) (village program planning) - develop in-village capacity for ongoing management, regulation and monitoring: - Develop community conservation organization - Data collection plan (marine biology, CPUE, and violation of regulations and) - Alternative livelihood skills development (through cross village learning and continued mentoring from learning centres) - Develop capacity for management (planning, bookkeeping, computer literacy etc) - Develop capacity for knowledge transfer and training as a learning centre (pedagogy – public speaking, mentoring etc)
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional	*Ecological*: in the learning centre sites bi-annual resource monitoring data indicates increase in all resources that were identified as being economically important. *Social*: Recognition of social structures that over time have endured a significant loss in legitimacy (due to local shift in perceptions but also historical political change), are regaining importance in village life. Peoples identity, norms and values find strong grounding in these social structures whereby the renewed recognition from political authorities have strengthened local interest and perceived importance of these institutions. *Economic*: Income from marine resource-based livelihoods has improved in several communities where specific resource cultivation had a strong focus. *Institutional*: All communities involved thus far gained formal recognition of customary resource management regulations, which they can use in sanctioning offenders. Project and financial management capacity in village has improved which has meant communities have increased their control over not only this project but also other new government programs seeking implementation in the village (in two cases the former conservation coordinators were later elected as village heads given their skillsets).
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional	*Social*: developing leadership skills amongst women and instituting them in those positions remains difficult at village level, given the expectations of women's roles in the social structure of households. *Market*: Market-driven demand has in some cases overridden some management principles instituted. High prices offered by middlemen led some community members to ignore village regulations and in typical 'boom and bust' fashion went about collecting/fishing for resources for immediate sales. *Governance*: sanctioning in-village offenders of rules and regulations developed by the community management team remains difficult given the social accountability (kinship relations) and hierarchies present in the community. Prosecution of offenses was disproportionately applied to outside offenders in comparison in-village offenders.

Case Study #14 NGO	**I-LMMA Up-scaling community-based management**
Issue	Notes
Evaluation of project	NOTE: The expansion project is in its first year of implementation and has yet to be evaluated however the overall I-LMMA program has received several evaluations (and has received several recognitions of achievement by independent initiatives): - Annual and monthly project evaluations are carried out, including an annual independent audit at the I-LMMA secretariat level (implementation and project operations run from February to November). - Annual village project evaluations involve financial closure and progress evaluation of the project year for each village. This is carried out by respective village project leaders and focal area leaders. (similarly, village project planning is carried out at the beginning of each calendar year) - Monthly, village programs need to submit a financial report to be able to receive subsequent month funding. Similarly, monthly activity evaluations of project progress are submitted to the I-LMMA secretariat. - There are 6-month internal project reviews carried out by the focal area coordinating team to monitor progress across sites, and to allow for adjustment of targets. - External reviews and awards. LMMA International network level: - Review of livelihood contributions of fisheries management and local participation, carried out at LMMA network level (2007) – assessment of trends in CPUE, HH income change, local perceptions of project success and utility, and extent of local knowledge about project. - Review and evaluation of biological data monitoring carried out at LMMA network level (2008) – to assess the validity and accuracy of community-based monitoring results in comparison with independent monitoring results from the same areas at the same time using a technical methodology. Awards: - Kalpataro, 'Indonesian conservation hero' award 2004, Ministry of Environment President Megawati. - Equator award "for recognition in outstanding success in poverty reduction through conservation" 2008, UNDP, Barcelona. Other NGO initiatives seeking to improve community engagement and local level resource management action have extended invitations to I-LMMA for support in developing their community participation components. Several invitations for collaborations have resulted: - The Nature Conservancy (TNC) in the Bird's Head Seascape (Raja Ampat), West Papua 2007-2011 - World Wide Fund for Nature (WWF) in the Bird's Head Seascape (Sausapor), West Papua 2009-2012 - Coral Triangle Support Program (CTSP), Timor Leste, 2010-2014, Manatutu
Lessons/learnings	The significant investment in developing a strong single village program has proven effective in streamlining expansion and limiting the need external support/funding in that expansion. In Biak, the strength of proven success through evidence is very strong and the spread by word of mouth is very effective (spread of reputation by local voice is the most effective). - Meos Mangguandi – Upper Padaido expansion (9 000 to 110 000 ha; from 1 to 4 islands). - Auki – Lower Padaido Islands (7 000 to 80 000; from 1 to 4 islands). The selection of the first village is thus very important. Since, equally - failure in developing a strong program in a pilot village (with evidence of success) can lead to a broader negative reputation across the area. Existing social networks proved highly important in initiating new village programs and using relationships between community leaders (across kinship and friendship links). Institutional reputation is very important, locally. At an I-LMMA level their local reputation in Biak is important

Case Study #14 NGO	**I-LMMA Up-scaling community-based management**
Issue	Notes
Opportunities	Expansion of community based engagement and community awareness in developing sustainable resource-based livelihoods may provide a critical mass of influence necessary to impact fish stocks and environmental quality at a larger scale (necessary for long term human dependence). The existing international LMMA institutional network provides vital connections to expand success stories, learn from failures and draw from expertise beyond a single country/region.
Sources of information / references	Cliff Marlessy, Country Director (personal communication) Margoluis and Salafsky 1998, 'Measures of Success' Govan, Tawake, Parks et al. 2005, 'LMMA network Learning Framework' LMMA 2008, 'GUIDEBOOK- Locally-Managed Marine Areas: A guide to supporting Community-Based Adaptive Management' I-LMMA 2013, 'MENDESAIN PENGELOLAAN SUMBER DAYA LAUT PESISIR DAN PULAU-PULAU KECIL YANG EFEKTIF' http://lmmanetwork.org/ I-LMMA 2016 brochure "Membangun Jaringan PLKL Di Wilayah Indonesia Timur (Building Resilient LMMA Networks in Eastern Indonesia)."

Case Study #15 NGO	**Yayasan LINI Sustainable Aquarium Fishery**
Issue	Notes
Title of project	Sustainable Aquarium Fishery & Aquaculture Project - Les, Bali
Funder of project	Various small grants; Indefinite loan of project site from private donor
Implementer / partners	Yayasan LINI (The Indonesian Nature Foundation)
Investment	Small grant funds from various environmental government and non-government organisations, including the Australian Consulate General (Bali) Direct Aid Project (DAP) small grant program.
Date/period of project	On-going since 2008
Location(s)	Desa Les, Tejakula, Buleleng, Bali
Goal of livelihood activity	Increased income through reef restoration, improved capture methods, aquaculture and premium marketing in response to overexploitation in the ornamental fish trade since the late 1980's, which had resulted in a marked decline in coral reef habitat, fish populations and local incomes.
Approach	Improve sustainability of the ornamental fish industry by: replacing damaging use of potassium cyanide with selective small-net capture; Increasing local incomes through premium marketing relationships; Reducing pressure on the wild population by breeding high value species and reducing fish mortality in the value-chain; Enhancing habitat through coral reef restoration; Diversifying employment through LINI activities.
Targeted beneficiaries	LINI employs 14 local people, including 4 male staff for data collection, coral reef restoration, gardening and aquaculture equipment maintenance. 10 women are employed from fishing families, 4 in aquaculture, trained in breeding and rearing of ornamental fish; 4 in hospitality for accommodating students/volunteers; 2 in environmental education. The initial 3-month training program with stipend enables selection of staff for employment according to skills and interest demonstrated. Work for female staff involves 2 - 4 hours /week part-time. Skills development includes English language training.
Gender component and women	LINI selected several female participants from fishing families to encourage livelihood diversification and an equitable spread of project benefits. Women are trained in activities that parallel the traditional division of labour in that women's work was land based. The project initially attempted mariculture management, rearing post-larvae and juvenile fish in coastal waters in submerged cages. Women packed fish for the trade. The second stage of the project involves ongoing experiments with breeding and rearing ornamental fish through aquaculture, where roles are again building upon women's traditional land-based activities. The project supplements family incomes; provides family friendly working hours; enables diversified and more balanced income sources since capture fishery income was seasonal.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity	NGO interventions aimed to: - Reintroduce less environmentally damaging net capture methods for the ornamental fish trade, and to establish best practice post-harvest management for long term stability of the resource base. - Reduce high mortality rate at trading stages through shortening holding time and supply chain length. - Improve fishing practices and livelihood benefits through certification and better value chain information, monitoring and targeting capture to specific numbers and species ordered. - Diversify income sources and relieve pressure on natural resource base through aquaculture and eco-tourism development

Case Study #15 NGO	**Yayasan LINI Sustainable Aquarium Fishery**
Issue	Notes
Activities implemented	- Coral reef restoration – Design and research effective techniques for reef restoration and enhancement to provide habitat for ornamental fish populations. Supply of shrimp pots and fish domes to other coastal areas provided new income generating activity, with a percentage of income to the fishers' cooperative; - Aquaculture - breeding and grow-out of target species; - Training - in aquaculture, environmental education and hospitality for volunteer/student tourism program to provide sustainable economic base for LINI activities; - Environmental education - disseminate information on non-destructive fishing techniques. - Supply chain development - with Maiden Head Aquatics (retailer of aquarium fish with 160 retail outlets in UK) <https://fishkeeper.co.uk/further-info/faqs> - Data collection – LINI staff member (Made Parti) collects catch and trade data from all middlemen in Buleleng. This data is provided to government and suppliers as a basis for best practice monitoring and policy development.
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional	- *Ecological*: The LINI program continued and expanded the conservation legacy of the earlier NGOs involved in ending potassium cyanide use in the fishery; it resulted in increased and better targeted harvest, especially from high value ornamental shrimp (cleaner shrimp) and improvement in village natural and human resource assets. - *Economic*: income & employment benefits include direct employment as well as benefit to fishers through sales from ornamental fish. Previously, high value species such as cleaner shrimp provided only seasonal incomes; new habitat (artificial shrimp pots) resulted in better reproduction, extended season and raised income for the fishers' group. (e.g. average income per month for three Les Village households from the capture aquarium fishery rose from Rp222,706 in 2012 to Rp535,000 in 2015). The presence of the LINI Aquaculture Training Centre has provided income and employment to fishers' families through aquaculture, hospitality and its community garden. - *Social*: Reinforces the significance of the fishers' cooperative organisation, and advances gender inclusion in non-domestic productive activities. - *Institutional*: The fisher's cooperative, Mina Bakhti Suansari, obtained 3-year certification from the Marine Aquarium Council in 2005. Although the original certification has now expired, Les continues to have an established reputation as a community that uses sustainable, cyanide-free fishing practices.

Case Study #15 NGO	**Yayasan LINI Sustainable Aquarium Fishery**
Issue	Notes
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional	*Ecological / Scientific*: Increasing ocean temperatures are affecting the coastal environment at Les. Coral bleaching in 2015-16 was severe, killing up to 30% of corals including corals planted in artificial structures. Research needs to be done on the relative resilience of planted as opposed to natural reef corals. - The distinctive biology of different species and complex breeding, feeding and holding techniques pose serious challenges to development of aquaculture for aquarium fish; there is need to shorten the market chain to reduce mortality for the wild caught, mariculture and aquaculture-based aquarium fish trade. *Social/Institutional*: The disruption caused by the market failure of the first NGO venture led to a rift in the fishers' cooperative that has inhibited village-wide development efforts. LINI and a second NGO (Sea Communities) work with different branches of the original fisher's cooperative. Collaboration between the two NGOs aims to restore relationships between the cooperative factions. *Economic/Governance:* Certification - Without consumer awareness of the importance of sustainable sourcing, the short-term economic benefits of adopting best practice are limited. For example, there is not yet a difference in price and no formal labelling, although industry collaborators (Maiden Head Aquatics) are attempting to develop that consumer awareness. It is necessary to move beyond the current voluntary system, which requires working with government and industry to improve the regulatory regime, supply chain and consumer awareness. There is need for: - Education of consumers to demand sustainable practice sourcing and fish welfare issues and to obtain higher prices for best practice production; - Knowledge/skills transfer to enable the fishers' cooperative to take on increasing responsibility for complex marketing and environmental management, as well as mechanisms for assuring transparency, accountability and adequate benefit distribution.
Evaluation of project	Self-evaluations and visitor feedback
Lessons/learnings	- Long-term commitment is crucial to trial and error development, social learning and trust building. Community development timeframes cannot be artificially forced; fixed and inflexible milestones are not suitable for community-based processes. Continuity is also critical to sustainability. - It is important to overcome tension between social and entrepreneurial models of community development, and ensure both accountability and distributive justice while enhancing the independence and the political and economic viability of local fisher groups. - - Conservation/environmental intervention/initiatives need to be able to show local economic benefit to gain community acceptance. It is harder to ask the community to embrace conservation projects if economic benefit is not evident early on in the project.
Opportunities	LINI's future project development aims include: - Establishing an autonomous project component to enable independent trading and monitoring by the fishers' group; - Establishing volunteer and study tour programs that would enable a combination of environmental education and collaborative learning, - and that could contribute to the local training program. - Develop an organic community garden as an alternative income opportunity (18 local resorts could be supplied) - Increase focus on product branding as a means of value adding and consumer education.
Sources of information / references	LINI data archives Website: www.lini.or.id Interviews with Gayatri Reksodihardjo and staff Carol Warren (personal communication)

Case Study #16 NGO	**Mangroves for the Future/GoI Sustainable Mangroves & coastal livelihoods**
Issue	Notes
Title of project	Mangroves for the Future – Small Grant Facility (SGF)
Funder of project	Mangroves for the Future[21]
Implementer / partners	National Coordinating Body District level government agencies (e.g. Marine Affairs and Fisheries) Local non-governmental organisations – various
Investment	Individual projects can access up to US $25,000
Date/period of project	32 individual projects between 2010 and 2016 Projects are implemented over a maximum of 12 months.
Location(s)	Various villages in South Sulawesi, North Sulawesi, Gorontalo, Central, Java, East Java, West Java, North Jakarta, and Yogyakarta
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified.*	The goal of the livelihood activity is to increase awareness of the importance of mangroves (and other coastal habitats) and to increase household income through livelihood alternative or enhancement programmes. Locally-based NGOs propose and implement approved projects in accordance with SGF Guidelines.
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability.*	The MFF programme is a regional initiative aiming to strengthen the environmental management for sustainable development. The programme has four cross-cutting themes: climate change, gender, conflict sensitivity, and property rights and resource tenure. A National Coordinating Body oversees an agreed programme of work under the *National Strategy for Mangrove Ecosystem Management in Indonesia*. The programme has three grant facilities – small, medium and large – which are intended to support activities under the agreed programme of work. The goal of the SGF is to support strategic and tailor-made local community action for management of coastal ecosystems and their use on a sustainable basis. The projects are intended to provide direct environmental and livelihood benefits at a local level and offer tangible 'models' to inspire policy-making, promote gender equality and secure livelihoods for marginalised peoples.
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	The beneficiaries targeted varied according to project type and location, but were typically poor households in coastal communities, with fishing and agricultural livelihoods.
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	Each project proposal is expected to incorporate gender considerations. These are described as differences between men and women with respect to access to and use of resources, observed practices and patterns of participation in decision-making, social beliefs and perceptions, and laws, policies and institutions that may affect men and women's participation in the project. Many of the project summaries identify women as having participated in a general manner, although some projects include specific activities targeting the creation of women's groups and alternative livelihoods activities for women.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The livelihood activities promoted are both alternatives and enhancements. Typical livelihood activities include the development of fish- and mangrove-based food products for sale in local markets. Examples include fish floss, seaweed crackers, mangrove cakes and nypa sugar. Other livelihood activities include mud crab rearing. The livelihood assets being built are: - Human (increased knowledge of coastal ecosystems and knowledge of fish- and mangrove-based food processing); - Social (creation of women's groups and links to local government agencies)

[21] *IUCN and UNDP, 2006*

Case Study #16 NGO	**Mangroves for the Future/GoI Sustainable Mangroves & coastal livelihoods**
Issue	Notes
	- Natural (replanting of small areas of coastal habitat)
Activities implemented *Describe the key activities or actions undertaken.*	The projects generally have two to three main activities: - Replanting and/or rehabilitation of a small area (less than 10ha) of mangrove or coastal vegetation. - Coastal environment or mangrove awareness activities involving school children and community members. - Livelihoods training for 20-40 people (typically 2- to 3-day course), including provision of equipment to support the livelihood activity (e.g. crab rearing cages, cooking utensils).
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc)*	Project summaries indicate that women's groups were able to make and sell fish- and mangrove-based food products within their villages. This resulted in increased income for participating group members. Small areas of mangrove and coastal vegetation were replanted and/or rehabilitated.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	While the projects resulted in replanting and/or rehabilitation of small areas (less than 10ha) of mangrove or coastal vegetation, many of the project reports noted poor seedling survivorship. There does not appear to be long term monitoring of the sites, and there is no information about the land or protection status of the sites. The projects are short-term and there do not appear to be (generally) strategies in place for on-going livelihoods support. For example, women's groups are formed and provided with short-term training and necessary equipment, but in most cases, there is no further training for business management or marketing (or health certification) to allow the products to be sold outside the village.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	Projects are evaluated according to individual logical frameworks prepared as part of the project application. Key indicators for effectiveness of the SGF are described as: - Meeting local needs - Based on the participatory approach - Supporting integrated coastal management - Complimenting and strengthen activities funded by other programmes - Oriented to coordination among stakeholders - Strengthen local institutions and implementing laws and regulations
Lessons/learnings	Completed project summaries highlight the following issues: - Lack of capacity among local implementing NGOs for basic project and financial management. - Need for project facilitators to receive training in appropriate mangrove replanting/rehabilitation techniques (including site selection). - Need for on-going support for alternative livelihood activities.
Opportunities	-
Sources of information / references	www.mangrovesforthefurture.org Mangrove for the Future (2012) *National Strategy and Action Plan: Indonesia 2012 – 2015*; Mangrove for the Future (2015) *Guidelines for Grant Facilities*.

Case Study # 17 NGO	**MDPI/ I-fish Fairtrade Seafood**
Issue	Notes
Title of project	I-Fish and Fairtrade USA – SEAFOOD
Funder of project	Various
Implementer / partners	MDPI (primary implementer) Fairtrade USA Various Indonesian fishing and fish-processing companies Various conservation-oriented international NGOs such as CI, TNC and WWF Various Indonesian and international Universities
Investment	Not specified
Date/period of project	Not specified
Location(s)	Buru and Ambon, Maluku; Kaimana, West Papua; East Lombok, Nusa Tenggara Barat; Kupang, Nusa Tenggara Timur; 4 locations in Sulawesi
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	MDPI's programmes focus on increasing small-scale fishers' livelihood opportunities, through increased knowledge of fisheries resources, and increased income and social benefits.
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability.*	MDPI adopts a value chain approach, evidenced by its mission which is to empower fishing communities to achieve sustainability by harnessing market forces. Core programmes aim to develop fishing communities and supply chains that support economic improvement and social stability. MDPI works in partnership with local and international industry partners.
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	Target beneficiaries are described as small-scale artisanal fishers. Project sites are selected based on relationships with proactive industry partners who are willing to engage in the sustainability approach.
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	Most programmes are focused on capture fisheries which are male dominated; however, a new programme supports development of the mud crab fishery in Kaimana West Papua, where all fishers are women.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being done (which assets are being built?)*	The livelihood activities are livelihood enhancements, as they aim to enhance the method of harvest and increase the quality of catches to attract a price premium. Livelihood assets being built include human capital (through increased knowledge of fisheries resources and improved harvest techniques), social capital (through development of networks) and physical capital (through development of community assets).
Activities implemented *Describe the key activities or actions undertaken.*	Two of MDPI's programmes are as follows: I-Fish: - I-Fish, developed by the IMACS, is an information system for data collection from small-scale fisheries. MDPI enumerators collect information about the level and location of fishing effort, status of individual stocks and fisheries and engagement of fishers with threatened and endangered species. - This information supports disaggregation of nationally collected fisheries data, with the aim of supporting collaboration in the development of provincial fisheries management plans. MDPI is implementing I-Fish at 22 sites in Nusa

Case Study # 17 NGO	**MDPI/ I-fish Fairtrade Seafood**
Issue	Notes
	Tenggara Barat, Nusa Tenggara Timur, Maluku, Sulawesi, and West Papua where fishers are engaged in the handline yellowfin tuna, pole and line tuna, mud crab, blue swimming crab, snapper, grouper fisheries. 825 vessels are enrolled in the programme. Fairtrade USA SEAFOOD Pilot Programme: - MDPI is the implementing partner for a Fairtrade USA-SEAFOOD pilot programme, working in conjunction with supply chain partners PT Harta Samudra and Coral Triangle Processors (CTP). CTP is the Fairtrade client/certificate holder. - This programme works with 22 fishers' associations from 16 villages in Maluku and Central Sulawesi (512 fishers), who receive a price premium based on a percentage of the dock price for yellowfin tuna. The fishers associations have a Fairtrade Committee and the Fairtrade Premium is paid into a special fund with the explicit stipulation that monies must be used for community (70%) or environmentally-focused (30%) projects. - Since Oct 2014, 145 tons of Fairtrade product has been exported with more than US$50,000 premium returned to communities. Community projects have included establishment of community cooperatives, establishment of waste disposal units and mangrove planting.
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets et.c)?*	The Fairtrade programme provides direct livelihood outcomes. While the Premium is not paid directly to fishers, they are incentivised to land higher quality fish and can contribute to decisions about how the subsequent Premium is spent on community and environmental projects. Bailey *et al.* (2015) reported that fishermen had a greater sense of ownership over the fishery and stocks, and had greater awareness of the value-chain and access to information.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	Fairtrade programmes are dependent on the creation of consumer demand for sustainably harvested seafood and establishing linkages through appropriate in-country processes and exporters and then importing-country retailers. MDPI encountered initial reluctance among suppliers/middlemen to collect data required for the Fairtrade programme and now require fishermen to collect the data themselves. Middlemen (*punggwana*) have important social and economic roles in small-scale fisheries in Indonesia and Bailey et al. (2015) point out that Fairtrade schemes are intended to empower participants and link them directly to processes, bypassing middlemen. In their study of the initial communities involved in the Fairtrade Program, Bailey et al. (2015) found that middlemen had a large role in providing inputs into the fishery, getting fish to the market and organising the community, but also contributed to an environment of ignorance and dependence. They found that the Fairtrade programme had resulted in a rapid change in organisation of the value chain, by removing middlemen as the central actor around whom the fishery is organised. Further, fishermen had determined to establish two cooperatives with Premium Funds, to enable them to acquire fishing assets independent of middlemen, and were exploring the option of undertaking the initial stage of processing and transport. Bailey et al. (2015) report perceptions of reduced catch, which fishermen attribute to legal and illegal catch by foreign fishing fleets.

Case Study # 17 NGO	**MDPI/ I-fish Fairtrade Seafood**
Issue	Notes
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	MDPI's annual report reports quantitative indicators. Bailey et al. (2015) used an ethnographic and assets and capabilities approach to explore the impacts of the Fairtrade programme.
Lessons/learnings	A long-term commitment and strong relationships with all value-chain partners are required to facilitate implementation and maintenance of required processes/standards.
Opportunities	-
Sources of information / references	MDPI (2015) *Annual Report*, www.mdpi.or.id; MDPI (2016) *Newsletter No.3, April 2016*. Bailey, M., Bush, S., Oosterveer, P. and Larastiti, L. (2015) "Fishers, Fairtrade, and finding middle ground" *Fisheries Research*, DOI 10.1016/j.fishres.2015.11.027.

Case Study #18 NGO	**MDPI /CI Fishery Improvement Project - Women's mud crab fishery development**
Issue	Notes
Title of project	Mud crab fishery
Funder of project	MDPI Conservation International
Implementer / partners	As above
Investment	Not available
Date/period of project	Commenced in about 2015; on-going
Location(s)	Arguni Bay, West Papua
Goal of livelihood activity	The fishery entered a Fishery Improvement Program in 2015. The goal of the FIP is to improve the sustainability of the fishery activity and to develop market access for the crabs within Indonesia, specifically to promote it to Indonesian markets as a sustainable, Indonesian-sourced product.
Approach	MDPI adopts a value chain approach, evidenced by its mission which is to empower fishing communities to achieve sustainability by harnessing market forces. Core programmes aim to develop fishing communities and supply chains that support economic improvement and social stability. MDPI works in partnership with local and international industry partners.
Targeted beneficiaries	~140 fisherwomen in Arguni Bay
Gender component and women	Women are the fishers in this fishery.
Description of livelihood activity and why it is a livelihood alternative or enhancement activity	In this fishery, women are the fishers. Usually they set traps twice a day. MDPI is conducting training for handling and storage of mud crabs, building capacity within the suppliers to develop a market within Indonesia, specifically Bali, and establishing a Data Management Committee, where all stakeholders invited to discuss the current status of the fishery and whether management measures are necessary.
Activities implemented	Data collection activities, establishment of a Data Management Committee, handling and storage training
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional	*Ecological*: Fisherwomen only sell male crabs by size / weight in accordance with government regulations. *Social*: Fisherwomen groups developed and registered to DKP and later on each group received a fishing vessel with outboard engine. Community based of Fisheries Surveillance developed and receive income by monitoring the Marine Protected area and mud crab fishing practices. *Institutional*: DKP Kaimana agree to support the development of Co-management of FIP Mud crab in the area.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional	The market is a challenge as currently no high demand for sustainable crab in Indonesia. Crabs need to be exported live which restricts the possible export destinations. The mud crab sites are in a remote part of West Papua, where the concept of FIPs is unknown and can be challenging to introduce to the communities. Currently no management in place. The only relevant regulation was the minimum size landing introduced in 2015 (Peraturan Menteri Kelautan Dan Perikanan Republik Indonesia Nomor 1/Permen-Kp/2015).
Evaluation of project	** the project is on-going
Lessons/learnings	Fisherwomen's skills in handling and packing to meet the requirements of the market is still very basic. In the trial shipment of crab from Kaimana to Bali, crab mortality rate is still above 5 % (reference point that requested by the business). An infrastructure like temporary pool shelters need to be built by the government to facilitate suppliers to place the crab after long trip from Arguni (3 to 4 hours)
Opportunities	Fisherwomen currently getting a very low price for the crabs, with the market chain actors in Jakarta making very high profits. There is an opportunity to build market capacity for the fisherwomen and the suppliers in Kaimana so that they can get a higher price.

Case Study #18 NGO	**MDPI /CI Fishery Improvement Project - Women's mud crab fishery development**
Issue	Notes
Sources of information / references	MDPI quarterly reports and final reports to CI; Duggan, Deidre (personal communication)

Case Study #19 NGO	**Academic/local fisher-boatmen - Lovina Dolphin Watching**
Issue	Notes
Title of project	Dolphin watching in Lovina: practices and impacts
Funder of project	James Cook University
Implementer / partners	Lovina village respondents
Investment	N/A
Date/period of project	2008 -2011; 2016
Location	Lovina (Buleleng, north Bali, Indonesia)
Goal of Livelihood activity	Improved sustainability of dolphin watching industry in Lovina, both for the dolphins and the boatmen.
Description of Livelihood activity and why it is a livelihood enhancement activity	Dolphin watching industry targeting the dolphins in Lovina. Main target is spinner dolphins (*Stenella longirostris*), although other dolphin species such as Fraser's dolphins (*Lagenodelphis hosei*) and Risso's dolphins (*Grampus griseus*) are sometimes sighted. The industry generates USD 4.1 million per annum of attributable direct expenditures in 2008/9. This profit has attracted new players into the industry over the last few years, expanding the number of local boats from 179 in 2009 to 192 in 2011, supplementing or replacing fishing activities.
Funder/partners	No formal NGO or government agency was involved in management of the dolphin watching program. Participatory research was funded by several donors during Mustika's PhD. No formal on-going research and community consultations concerning dolphin watching activities were planned. However, some follow-up research concerning women's indirect dependence on the industry, in particular as souvenir sellers, has taken place as a result of this ACIAR project.
Activities implemented	Research concerned: - the impact of boats on dolphin conservation - tourist experience and satisfaction - economic benefits for the local community - the governance of the industry Some community meetings aimed at improving dolphin watching practices in Lovina
Gender issues and women	No specific gender program was involved. However, follow up research (2016) has recently identified that female souvenir sellers also benefitted substantially from the industry, and the absence of dolphins may deprive these women of income, which amounts to as much as 3x the average monthly per capita income of Buleleng District.
No of people reached/involved	About 100 boatmen in Lovina were reached between 2007-2015 (through the research and subsequent meetings). Subsequent data collection on female souvenir sellers included 45 women.
Successes and Benefits for Livelihood outcomes? Direct and Indirect? - Ecological - Social - Economic - Institutional	*Ecological*: The ecological sustainability of this industry to the dolphins is currently questionable due to impacts of a growing number of dolphin watching boats and failure to abide by best practice protocols; but the actual negative impact is still unquantifiable. *Social*: The industry provides a significant identity for Lovina, particularly for the dolphin watching boatmen. The satisfaction levels of dolphin watchers are divided between those disliking the practice of boats chasing the dolphins and those admiring the picturesque seascape Lovina has to offer, with the dolphins as the main part of the seascape. The dolphin watching industry in Lovina has a significant *economic* impact not just to the boatmen, but also to the restauranteurs, hoteliers, transport agents, souvenir sellers etc. *Governance*: The dolphin watching associations have agreed on three in-principle agreements to control boat numbers, speed, distance from the dolphins, but the implementation of these agreements is still ad-hoc or patchy.

Case Study #19 NGO	**Academic/local fisher-boatmen - Lovina Dolphin Watching**
Issue	Notes
Challenges/Constraints/ Livelihood Sustainability Issues - Ecological - Social - Economic - Institutional	Issues include: *Ecological*: quantifying the impacts of the boats to the dolphins; determining residency patterns of the spinner dolphins; estimating abundance of the spinner dolphins. *Social*: improving tourist satisfaction; maintaining the identity of Lovina as a dolphin watching village without sacrificing animal welfare; a new influx of tourists coming from China, who are less attuned to sustainable tourism practices, has had an effect on dolphin watching practices. *Economic*: a sustainable profit from the industry cannot be truly achieved if the watching is not conducted in a sustainable manner. Hence, controlling the number of boats around the dolphins and the total number of available boats are big issues in Lovina. *Institutional*: determining the details of best practices (e.g., controlling boat driving behaviours, managing the distance and number of boats) and establishing local mechanisms to police those best practices.
Lessons/learnings	Because the dolphin watching industry in Lovina makes a significant economic contribution to the community beyond the boatmen who are directly engaged, including also the restauranteurs, hoteliers, transport agents, souvenir sellers etc., the questionable ecological sustainability of this industry may deprive these actors of a sustainable income in the future. A better understanding of the ecology of the target spinner dolphins in Lovina and adjacent villages (e.g. Tejakula, east of Lovina) is needed. Improvement of watching practices is necessary, as well as understanding other human-dimension aspects, such as the household economics of the boatmen.
Opportunities	Lovina is now a Marine Protected Area, hence sustainable tourism should be part of its MPA portfolio. Tourists are increasingly more aware of best and bad practices. TripAdvisor and other online tourism sites can be used to promote best practices in Lovina. A new dolphin watching destination in Tejakula (Buleleng, 40 km east of Lovina) established circa 2001 provides more incentive to resume action research work in Lovina and extend it to Tejakula to avoid the similar chaotic development from happening in Tejakula.
Sources of information	(Mustika 2011; Mustika et al. 2013; Mustika et al. 2015; Mustika et al. 2012)

Case Study #20 NGO	**Turtle Conservation and Alternative Livelihoods, Perancak, Bali**
Issue	Notes
Title of project	Sea Turtle Conservation and Eco-tourism development
Funder of project	WWF; Jembrana District Government; private company & visitor donations
Implementer / partners	At different stages, government, local and international NGOs and have been involved in implementation: - WWF Bali branch from1996 to 1998 worked with local NGOs, Kurma Asih and Yayasan Wisnu to develop a turtle conservation program. - Kurma Asih - is the Perancak based NGO founded by a former turtle hunting extended family; - Yayasan Wisnu - is a Bali based NGO (Denpasar) engaged in community mapping and community-based development programs;
Investment	Not available
Date/period of project	WWF 1996 - 1998; Kurma Asih maintained an on-going relationship with Yayasan Wisnu through the JED eco-tourism network
Location(s)	Perancak village, Jembrana District, Bali Province
Goal of livelihood activity *Livelihood issue being addressed and desired livelihood outcome(s), including targeted participants and how identified*	The primary objective of the intervention and associated livelihood activities was to end the turtle trade (30,000 turtles per year sold in Denpasar) and improve local coastal resource management through alternative livelihood options for local people including: donation subsidized conservation work [PES], eco-tourism development through the Wisnu instigated Community based Eco-Tourism network (JED) and associated activities (accommodation, catering, carving, performance, etc.)
Approach *Theoretical basis or driving narrative of intervention design; e.g. poverty alleviation, value chain, co-management, SLA, conservation, community-based, adaptation and mitigation, food security, vulnerability.*	Sea turtle conservation and ending the turtle trade were the primary objectives of the intervention. WWF project design aimed at co-management combined with efforts to subsidise sea turtle protection and local education through donations and nest adoptions. It also aimed to stimulate alternative livelihood development through training programs aimed at supporting ecotourism development and environmental education.
Targeted beneficiaries *What were the characteristics of the targeted beneficiaries and did project reach these beneficiaries?*	At the request of Kurma Asih, the WWF intervention in 1997-8 involved subsidy of the following activities: - Community Mapping of Perancak village by Yayasan Wisnu. - Training of the Kurma Asih group in turtle conservation, nest relocation, head-start rearing & release techniques, record keeping etc. - Establishment of a nest adoption program on the WWF website to subsidise Kurma Asih activities. - Training of villagers in catering, souvenir carving, and other tourism related skills that would support tourism development. Livelihood benefits have been limited to date. There was no investigation of the feasibility and requirements for successful eco-tourism development. Yayasan Wisnu / JED included the Perancak program in its village-based eco-tourism program, but lacked the resources to effectively promote the site, which was more remote than most of its village-based network.
Gender component and women *Did project design include gender analysis and were women specifically targeted?*	In the absence of any gender specific guidelines, activities tended to follow the existing division of labour. Members of Kurma Asih are all adult males who were former turtle hunters. Young men in the village were sent to Ubud for training as carvers, while several young women, were trained in catering for visitors.

Case Study #20 NGO	**Turtle Conservation and Alternative Livelihoods, Perancak, Bali**
Issue	Notes
Description of livelihood activity and why it is a livelihood alternative or enhancement activity *What was carried out and what livelihood enhancement is being* done (which assets are being built?)	The conservation and tourism related activities were meant to provide alternative livelihoods to the lucrative turtle trade and to bring the community onside with the conservation agenda. The livelihood assets built include: - appreciation of local assets and resources and high expectation of the potential for eco-tourism development around the sea turtle as a flagship species. - enhanced knowledge of sea turtle life cycle and ecosystem importance as well as nest relocation management skills. economic - although the project became the most successful nest relocation project in Bali, it has not yet found a sustainable economic basis for supporting the Kurma Asih conservation program, or enhancing local incomes through broader engagement in eco-tourism development.
Activities implemented *Describe the key activities or actions undertaken.*	Primary activities involve beach patrolling, nest relocation, hatchling feeding and ultimate release; educational talks are provided by Kurma Asih members to occasional school or tourist visitors. The core membership of Kurma Asih remains six male extended family members of the original turtle hunting group; Originally, other unrelated villagers were involved as volunteers, but management control has been kept tightly in the hands of the founding family and other members have left or were left out in subsequent years, partly due to limited funding and unrealistic expectations of eco-tourism development.
Successes and benefits for livelihood outcomes? Direct and indirect? - Ecological - Social - Economic - Institutional *How did the activity impact on livelihood outcomes (e.g. income, diversification, sustainable natural resource use, improved capacity, quality of life, wellbeing, reduced marginalisation and vulnerability, improved assets etc.)?*	Improved assets included expansion of scientific knowledge and changed attitudes regarding turtle conservation; Donations (Jembrana District government; Daihatsu; Bali Hai) over the years have improved infrastructure and educational information; Beachside land was purchased by the government for the turtle nest relocation sanctuary. To date, however, economic benefits and livelihood improvements have been extremely limited and resourcing the project remains problematic. Disappointment with the failure to follow through with the projected benefits from tourism development led the Kurma Asih group to separate from WWF. They have since run a more or less shoe string operation, dependent upon occasional grants from government and donations from business enterprises and passing visitors. There has been revived interest from WWF and CI since 2016; Currently a project for mangrove restoration in Budeng and Perancak has potential to be linked to a wider development of the eco-tourism potential that has been underdeveloped to date. Yayasan Wisnu remains involved through its small-scale JED eco-tourism and development planning projects and has recently re-mapped the village along with neighbouring Budeng and Air Kuning with funding from Yayasan Samdana on the recommendation of Conservation International.
Challenges/constraints/ livelihood sustainability issues - Ecological - Social - Economic - Institutional *These could be governance, economic, social, cultural, market etc.*	*Ecological/Governance issues*: Best practice involving immediate release of hatchlings (as opposed to earlier head-start practice of rearing to larger size before release) is not adopted by Kurma Asih, with the result that too many hatchlings are kept past their most vigorous phase and are susceptible to weakness and disease in over-crowded pools. State law and International conservation principles prohibit 'sale' of endangered species, including turtle eggs. The practice of compensating villagers who bring nests with pocket money (*upah lelah)*, especially from other villages down the coast, is also regarded by some as transgressing these guidelines. Regional government itself has ambivalent policies, often requesting large release 'events' as public relations exercises. *Economic*: Both compensation to other villagers for delivery of nests and holding of hatchlings are justified in the view of Kurma Asih members in order to maintain the economic viability of the project. The 100,000 rp payment of 'pocket money' for nest transfers to villagers bringing in nests redistributes income to other villagers beyond the conservation group membership and provides incentives not to sell eggs in the Jembrana market. Nest adoptions cover some maintenance costs and provide income to Kurma Asih members for patrolling the beach, documenting nest and hatchling information, feeding hatchlings and

Case Study #20 NGO	**Turtle Conservation and Alternative Livelihoods, Perancak, Bali**
Issue	Notes
	maintaining the sanctuary pools, providing information and educational experiences to visitors and local schools. Perancak is too far from the tourism centres of the south to have all but a small flow of visitors to the centre without active development of its tourism potential. The loss of WWF's reputation and website meant nest adoptions dropped to inadequate levels. Eco-tourism has yet to be developed effectively in the area because of distance from the capital and limited infrastructure. The trained souvenir woodcarvers have all given up this occupation, which was never tied to a marketing program and brought little remuneration. *Institutional /Social*: The monopoly of the project by the founding family of the Kurma Asih NGO is a source of jealousy in the community and limits wider community-based involvement and expertise. At the same time, it is unlikely that in the absence of routine funding, a wider volunteer community-based organisation would have the longevity and drive to ensure the continuity of the turtle conservation program.
Evaluation of project *How was project evaluated? What evidence-based indicators/criteria were used?*	No formal evaluation of the project has been undertaken. After disagreements over local practice and lack of NGO economic support, WWF and Kurma Asih separated and the latter has operated from small-scale donations and occasional government or CSR business support and a low level of eco-tourist visits. Income sometimes falls short of costs and commitments to make contributions to villagers who bring in nests from adjacent coastal communities.
Lessons/learnings	Continued, if erratic, involvement of Yayasan Wisnu, District government, academic researchers and passing tourists have provided irregular income to keep Kurma Asih's project going, although not under best practice conditions. Long-term commitment to funding and regular negotiations, training opportunities, etc. are critical. Effective ongoing and systematic linkage between government, NGOs, community and outside donors would enhance the potential for adaptive learning, enforcement of common standards/ policies, and development of an education and eco-tourism program that could sustain the conservation and livelihood goals of the community and local organisation. Strategies for dealing with the conflict between conservation and livelihood goals are essential; Best practice outcomes often require sacrifice of improved livelihood objectives - as in the example of immediate release of turtle hatchlings since this is believed to eliminate their tourist attraction and nest adoption potential. Similarly banning compensation to villagers who patrol and bring in nests for protection ignores the need for some economic spin-offs in a poor fishing community. More substantial donor support tied to best practice evidence could resolve these issues. Alternatively, a well-funded, carefully planned, mentored and monitored eco-tourism program, again tied to best practice compliance and wider village involvement, could provide sustainable livelihoods in the village.
Opportunities	The two decades long continuity of Kurma Asih's program despite unpredictable support mechanisms and inadequate implementation of conservation protocols accounts for the recently revived interest of NGOs, CI and WWF. If Payment for Environmental Services principles are introduced into government, NGO and donor goals, tied to ongoing research and monitoring of best-practice release, record keeping, and community education and inclusion, there is a better chance of developing the intended synergies with long-term improvement in livelihood, education, and conservation outcomes.
Sources of information / references	Yayasan Wisnu / JED records; Kurma Asih records; Carol Warren fieldnotes 1998 to present. (Warren 2016; Warren & Visser 2016)

11.1.3 Livelihood Project References

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11.2 Project workshop agendas and participants

11.2.1 Agenda and participants in Workshop 1, Bali, February 8 to 12, 2016.

Small-scale fisheries in Indonesia: benefits to households, the roles of women, and opportunities for improving livelihoods

Agenda for workshop at Mercure, Sanur (Day 1 and 2)

Photo: Participants in Workshop 1 in Sanur Bali (February 2016). L to R: Natasha Stacey, Toni Massey (LINI), Ria Fitriana, Ratna Fadilah, Neil Loneragan, Icha Puta Liza Mustika, Budy Wiryawan, Dedi Adhuri, Christine Parfitt (Botol for Botol)

Day 1, Monday February 8, Mercure, Sanur

Welcome and Introductions (Neil Loneragan)

Overview of the weeks activities/agenda (NL, Natasha Stacey)

Project objectives and activities/approaches/outputs (NL and NS) (distribution of project brief). The Literature review (NS and Ria Fitriana): 'Key Issues in small-scale fisheries (including aquaculture), livelihoods and gender: preliminary results to date. Overview of first scan of the literature around the three main topics: SSF in Indonesia, gender issues and coastal livelihood enhancement, strengthening, diversification, alternatives, successes/failures/approaches etc).

Presentations from Participants – Presentations should focus on addressing one or more of the following questions where possible a gendered approach:

- What are the livelihood contributions of fisheries/aquaculture to households?
- What is the role of women in fisheries/aquaculture and livelihood contributions?
- What are the essential components for livelihood improvement or diversification in SSF? What are the opportunities for or constraints to livelihood improvement or diversification? Which approaches to improving livelihoods (strengthening, diversifying, finding alternatives) have been most successful in improving the well-being of these SSF communities?
- Where are the knowledge gaps for livelihood improvement in Indonesian SSF contexts?
- What tools or methods are appropriate for SSF livelihoods studies and evaluations?

- Shark fisheries and livelihoods of eastern Indonesia (Vanessa Jaiteh)
- Improving the value chain of inshore fisheries and seaweed farming in Pantar Island as a livelihood diversification activity (Ria Fitriana)
- Dolphin tourism of Lovina (Putu Mustika - Icha)
- Livelihoods in Lombok (Dedi Adhuri),
- Possible grouper stock enhancement opportunities, livelihoods on Sumatra (Budy Wiryawan)
- Mangrove Rehabilitation and Fish Farmer Field Schools experiences, South Sulawesi (Blue Forests, Ratna Fadilah)

WWF experiences on fisheries and livelihood enhancement (Veda Santiaji/ Abdullah Habibi)

Discussion: Identify key factors that contribute or inhibit livelihood improvement, Summarise key findings on gender roles in SSF of Indonesia.

Day 2, Tuesday AM (Mercure, Sanur)

Review of day 1 and key messages (NL, Carol Warren, NS)

Coastal community conservation issues in Bali – Perancak case (CW)

Approach for field trips (aim of field trip and itinerary) (NL, CW)

Questions/Discussion (NL)

Depart for field around lunch/after lunch

Agenda for workshop at Mercure, Sanur Day 5

Day 5, Friday (Mercure, Sanur) (am till lunchtime)

Summary of site visits (NL, CW, NS) – key messages from the workshop and site visits.

Review of methodological approach for the project, literature review and case studies (NL, NS, CW)

Review of potential sites for case study evaluation

Reporting and communication for the project (NL)

Roles and responsibilities of partners and draft Plan for 2016 - activities and milestones (NL)

Schedule and location for workshops 2 and 3 in 2016 (NL)

Close

Participants

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Ratna Fadilah (Blue Forests, Indonesia) <ratnamangrove@gmail.com>

Apologies

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Veda Santiaji/ Abdullah Habibi (WWF Indonesia) - vsantiadji@wwf.or.id ; AHabibi@wwf.or.id

Observers:

Abdul Halim (halimabdul1213@gmail.com), formerly with TNC on Bali, now consultant and enrolled in a PhD on fisheries at IPB

Christine Parfitt, (c.parfitt@murdoch.edu.au), PhD student in environmental education, Murdoch University.

11.2.2 Agenda and participants in Workshop 2, Charles Darwin University, May 2016.

Agenda ACIAR Livelihoods project Workshop II, 19 & 20 May 2016

ACIAR Project Workshop

Small-scale fisheries, livelihoods and gender in SSF in eastern Indonesia

Thursday and Friday 19 and 20 May 2016

Research Institute for the Environment and Livelihoods

School of Environment

Charles Darwin University

Location: RIEL Meeting Room, Building Red 1, Level 2, CDU)

http://www.cdu.edu.au/campuses-centres/casuarina-campus

Photo: Participants of Workshop 2 and the ATS Symposium, Charles Darwin University (May 2016) (Charles Darwin University).

Welcome, Prof Andrew Campbell, Director Research Institute for the Environment and Livelihoods, School of Environment, Charles Darwin University.

Introduction of livelihoods study and summary from Coastal Livelihoods Symposium workshop (Neil Loneragan, Natasha Stacey)

Learnings from the Coastal Livelihoods in Arafura and Timor Sea Symposium May 16 to 18, 2016 (Dirk Steenbergen, NS)

Review of literature (NS, Ria Fitriani)

Progress on literature reviews (NS and RF)

Discussion of templates.

Update of Livelihood studies and case study templates completed for livelihood studies/projects

- Bali Strait Fishery Decline, Governance and Livelihoods (Carol Warren)

- Improving the value chain of inshore fisheries and seaweed farming in Pantar Island (Ria Fitriana)
- Sea turtle conservation as alternative livelihood? (Carol Warren)
- EAFM and SSF fishers in Jor Bay, Lombok (Dedi Adhuri),
- Dolphin tourism of Lovina (– Icha Puta Mustika)
- Coastal Field Schools for Sustainable Mangroves – Aquaculture (shrimp and milkfish) in south-east Sulawesi (Blue Forests, Ratna Fadilah)
- Mangroves, gender and livelihoods in Indonesia (Emily Gibson)
- Small-scale local tourism ventures on Bali (Gede Astana, CW)
- Mud crab and tuna fisheries (MDPI, Neil L for Deidre Duggan – template completed but no presentation)
- LMMA (Dirk Steenbergen)
- Shark fisheries and livelihoods of eastern Indonesia (Neil L for Vanessa Jaiteh)
- Livelihoods and poor fishers in West Sumatra (Budy Wiryawan, Richard Stanford); and shrimp aquaculture in Lampung, Sumatra (Budy)

Discussion of approach and case studies for this project, group writing

Gaps in case studies

Location, timing and purpose for 3rd workshop (e.g., Lombok, late August to early November 2016)

Gender and Fisheries Symposium, Bangkok, August http://genderaquafish.org/2016-gaf6-august-bangkok-thailand/gaf6-themes/

Final report (December 2016)

Journal paper(s)

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11.2.3 Agenda and participants in Workshop 3, Lombok, 21 to 25 November 2016.

Photo: Participants of Workshop 3 at Sengiggi Beach Lombok (November 2016). L to R: Dedi Adhuri, Vanessa Jaiteh, Icha Puta Liza Mustika, Neil Loneragan, Budy Wiryawan, LIPI Lombok, Carol Warren, Natasha Stacey, Ria Fitriana, Dirk Steenbergen.

Participants

Neil Loneragan, Murdoch University

Natasha Stacey, Charles Darwin University

Carol Warren, Murdoch University

Dedi Adhuri, LIPI

Budy Wirayawan. IPB, Bogor

Ria Fitriana, Charles Darwin University

Vanessa Jaiteh, Murdoch University

Putu Mustika, Murdoch/James Cook University

Dirk Steenbergen, Charles Darwin University.

Emily Gibson, Charles Darwin University

Gede Astana, Yayasan Wisnu, JED Village Ecotourism Network, Bali

Agenda

Day 1 Monday

Welcome to Workshop participants (Neil)

Project Overview, work completed to date and Workshop 3 Objectives and Outputs (ie GAF conference & presentation, Draft Final report, literature review and journal article) (Neil)

Literature Review - Review of literature on 'SSF in Indonesia: benefits to households, the roles of women and opportunities for improving livelihoods' - Providing a Context for the evaluation of case studies

Present draft literature review document (Natasha)

Part A: Definitions, characterisation of SSF, contribution to livelihoods SSF in Indonesia, gender and SSF, women's participation.

Part B Approaches to Small-scale fisheries improvements and, Livelihoods Alternatives and Enhancement in Indonesia

Part C: The case studies prepared to date which capture the range and scope of types of livelihood improvements and projects (Natasha)

Summary of work to date: Present the GAF Conference presentation (Natasha)

Part D: Draft framework (spreadsheet) for comparative analysis of case studies for discussion and finalisation:

A draft table will be presented for discussion and finalization to use as the basis to identify qualitative data analysis to summarise key aspects of the livelihood project case studies to allow for some comparison across case studies. The aim is not to be comprehensive but to capture the scope and range of livelihood activities through a qualitative assessment of documentation. We propose to loosely use the Sustainable Livelihoods Approach Framework as a basis for the analysis.

Refer to attached draft table and discuss categories for completion

Discuss the categories for analysis: e.g. geographical spread, funding, involvement of different organisations, objectives, approaches to livelihood projects, gender, outcomes etc,

Identify groups of projects for consideration in Day 2

Day 2 Tuesday

Recap Day 1 and discussion of further insights (Neil/Natasha)

Case study analysis: Small Group Work

Break into Small groups to work on analysis of case studies/templates and prepare summaries of findings which can be Part D of the Report. Each group takes on a number of case studies to extract the information and build the table. Each group initially works on one project and reports back. We discuss the project and modify the table as needed.

Day 3 Wednesday field trip to LIPI, Lombok and Gili islands

Day 4 Thursday

Review of information from case studies

Discussion for finalizing the analysis of Part D (based on findings from Part B and C

Part E: Discussion of Lessons Learned, Recommendations for future (e.g. Opportunities, Constraints, Knowledge Gaps)

Discuss ACIAR final report (timeline for submission and assign tasks)

Draft outline for journal article and journal identification (timeline and assign tasks)

11.3 Full literature review

ACIAR Small Research Activity FIS/2014/104

The benefits to households, the roles of women, and opportunities for improving livelihoods in small-scale fisheries with a focus on Indonesia

Literature Review

Prepared by Natasha Stacey, Emily Gibson and Ria Fitriana

Research Institute for the Environment and Livelihoods

Charles Darwin University

5 June 2017

Table of Contents

Acronyms and Abbreviations

AIGA	alternative income-generating activity
ALP	alternative livelihood programme
BPS	Central Bureau of Statistics (*Biro Pusat Statistik*)
FAO	Food and Agricultural Organization of the United Nations
HLPE	High Level Panel of Experts
ICAD	integrated conservation and development
km	kilometre
MMAF	Ministry of Maritime Affairs and Fisheries
MPA	marine protected area(s)
NRM	natural resources management
NTT	Nusa Tenggara Timur
PES	Payment for Ecosystem Services
RFLP	Regional Fisheries Livelihoods Programme
SLA	Sustainable Livelihoods Approach
SLF	Sustainable Livelihoods Framework
SOWFA	The State of the World Fisheries and Agriculture
SSF	Small-scale fisheries
SSF Guidelines	Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries

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Definitions and concepts

- *Aquaculture:* the farming of aquatic organisms such as fish, crustaceans, molluscs and aquatic plants, cultivated in fresh or salt water under controlled conditions. Aquaculture types include marine (includes seaweed cultivation), brackish pond, freshwater pond, cage, paddy fields for species such as shrimp, groupers, seaweed, milk fish, tilapia, mud crabs.

- *Fishers*: as opposed to "fishermen" is used as a gender-neutral term, as are "fisherfolk" and "fishing community".

- A *fishery* is defined in terms of the "people involved, species or type of fish, area of water or seabed, method of fishing, class of boats, purpose of the activities, or a combination of the foregoing features".[22]

- *Fisheries* comprise marine fisheries operating along the coast, lagoons and offshore as well as inland (freshwater) activities, on lakes, rivers, reservoirs, floodplains, permanent or seasonal waterbodies (Bene *et al.* 2015).

- *Gender* is defined as "a set of social constructs ascribing to women and men different abilities, attitudes, personality traits, and behavioural patterns as well as the power and systems of differentiation that are revealed in the unequal division of labour and resources between men and women" (Leisher *et al.* 2016 p.3). Thus simply, gender in the context of fisheries and the environment refers to the different roles, rights and responsibilities of men and women as determined by social and cultural norms rather than biology.

- *Gender analysis* is "the study of the different roles of women and men in order to understand what they do, what resources they have, and what their needs and priorities are" (FAO 2016a). Gender analysis studies the linkages between these factors in the context of the larger social (including cultural), economic, political and environmental context (UNESCO 2000).

- *Gender equality* occurs "when women and men enjoy equal rights, opportunities and entitlements in civil and political life" (FAO 2016a). In relation to livelihoods, general equality requires equal participation in decision making, equal access to and control of resources and the benefits of development and equal opportunities in employment.

- *Gender equity* means "fairness and impartiality in the treatment of women and men in terms of rights, benefits, obligations and opportunities" (FAO 2016a). Treatment may be equal or different but considered equivalent (International Labor Organization 2000).

- *Gender mainstreaming* is "the process of assessing the implications for women and men of any planned action including legislation, policies and programmes, in any area and at all levels" (UNESCO 2000 p.5). Gender mainstreaming has three key elements: empowerment, accountability and integration.

- *Gender relations* are "the ways in which a society defines rights, responsibilities and the identities of men and women in relation to one another" (FAO 2016a).

- *Gender roles* are "those behaviours, tasks and responsibilities that a society considers appropriate for men, women, boys and girls" (FAO 2016a).

[22] *FAO glossary: www.fao.org/fi/glossary/default.asp.*

- A *livelihood* comprises the assets (natural, physical, social, human financial), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household (Ellis 2000).

- *Livelihood diversification* the process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and improve their standards of living (Ellis 2000 p.15). Diversification "is a process by which households engage in multiple income generating activities…as a strategy for spreading risk and reducing vulnerability" (Brugere *et al.* 2008 p.3).

- *Mariculture:* a branch of aquaculture that focuses on the cultivation of marine organisms; it may be practiced in the open ocean in nets and cages, by ranching, on in tanks or ponds containing sea water.

- *Sea ranching*: refers to a 'put, grow and take' mariculture activity whereby species such as sea cucumbers are released into unfenced marine areas to grow until they are ready for harvest. Sea ranches are located often where participants have exclusive access rights to the area being ranched.

- *Small scale fisheries*: fisheries targeting multispecies stocks using traditional and/or low-technology gears (Berkes *et al.* 2001), operating from shore or small fishing vessels in coastal waters (Allison & Ellis 2001; Chuenpagdee *et al.* 2006) and organised at the household or community level (Kurien & Willmann 2009) with most of the catch destined for subsistence consumption, local bartering and domestic trade (Bene *et al.* 2005).

- *Small-scale fishing community* "is a community whose livelihoods are dependent on the natural marine, coastal or inland resources, with people actively involved in harvesting, processing and/or selling the resources as a primary means of income; and whose social and cultural identity is integrated into these practices" (Bene *et al.* 2015 p.3).

- *Sustainable livelihood*: A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Chambers & Conway 1991).

Introduction

This literature review provides the background to the results presented in the final report to ACIAR (Loneragan and Stacey 2017 *Final Report to ACIAR on SRA Small-scale fisheries in Indonesia: benefits to households, the roles of women, and opportunities for improving livelihoods).*

The overall aims of this project were to review information and methodologies for evaluating the contribution of small-scale fisheries ("SSF") and aquaculture to household livelihoods in coastal communities of Indonesia, and to examine the roles of women in SSF. The project has investigated cases where attempts have been made to enhance the livelihoods of SSF communities by strengthening or diversifying existing livelihoods or introducing alternative ones. The effectiveness of initiatives to enhance SSF livelihoods and their impact on women were evaluated.

Approach to literature review

The approach of this review was to examine the findings from several past studies in published and unpublished literature, and in livelihood projects in coastal communities.

The review was completed in 2015/16 as a desk-top study and was discussed and progressed at three workshops. The first workshop was held in Bali; the second workshop was in Darwin, immediately following the CDU Symposium on Contemporary Perspectives on Coastal Livelihoods in the Arafura and Timor Seas Region; and the third workshop was held in Lombok, focusing on group analysis of evaluations of livelihood projects implemented in Indonesia over the last two decades.

Key questions for guiding the literature review were developed with the project team during Workshop 1 and are as follows:

- *What are the livelihood contributions of fisheries/aquaculture to households?*
- *What is the role of women in fisheries/aquaculture and livelihood contributions?*
- *What are the essential components for livelihood improvement or diversification in SSF?*
- *What are the opportunities for or constraints to livelihood improvement or diversification?*
- *Which approaches to improving livelihoods (strengthening, diversifying, or finding alternatives) have been most successful in improving the well-being of these SSF communities?*
- *Where are the knowledge gaps for livelihood improvement in Indonesian SSF contexts?*
- *What tools or methods are appropriate for SSF livelihoods studies and evaluations?*

The desired outcomes of the review were to:

1) Develop an understanding of the significance of SSF in Indonesia and women's roles in these fisheries;
2) Describe success factors in developing enhanced coastal livelihoods of SSF communities through mechanisms to strengthen, diversify or find alternative livelihoods;
3) Identify lessons from examples where attempts have been made to strengthen, diversify or develop alternative livelihoods for small-scale fishing communities in Indonesia; and
4) Document knowledge gaps and future research needs.

The literature review is divided into two Parts, followed by recommendations for further research:

- Part A focusses firstly on the global context of SSF, their characterisation in Indonesia, and contributions to livelihoods and wellbeing; secondly on gender in SSF, including women's roles and contributions at the household level, and the gendered impacts of SSF vulnerability; thirdly

on gender, livelihood development and policy in SSF; and fourthly on gender and fisheries research and methods;

- Part B examines approaches to SSF livelihood diversification, enhancement (e.g. the Sustainable Livelihoods Approach and Framework) and alternatives, including best practices, constraints and opportunities.

Recommendations for further SSF, livelihoods, gender research and capacity building are also provided at the end of the report.

PART A: Small-scale fisheries: General characterisation and global context

1. Introduction

Small-scale (or artisanal) fisheries typically operate from shore or small vessels using labour intensive, manual and/or low-technology gears to target a suite of species and habitats (Allison & Ellis 2001; Garcia *et al.* 2008). As an economic activity, a fishery is usually characterised by the scale at which it operates – ranging from small-scale to large-scale (Bene *et al.* 2015). Fisheries are also described as being situated on a socio-economic continuum from subsistence, artisanal, traditional, recreational to large-scale commercial[23] enterprises that operate globally in developed and developing country waters (FAO & WorldFish 2008; Gutierrez *et al.* 2011; FAO 2012). Compared to large-scale fisheries, which are mostly commercial in nature and comparatively distinct (Garcia *et al.* 2008), characterisation of SSF is more problematic due to variable and often inappropriate usage of the terms subsistence, traditional and artisanal[24] (Berkes *et al.* 2001; Stacey 2007), the high diversity of vessel types and sizes, gears employed, locations fished and crew numbers involved (Chuenpagdee *et al.* 2006), the social and structural organisational units of the sector (Johnson 2006) and the varying contributions to subsistence and commercial outcomes (Branch *et al.* 2002). Nevertheless, seeking a unifying definition of SSF is important to focus the development discourse on the unique contributions that the small-scale sector can provide to fish-dependent communities (Chuenpagdee *et al.* 2006; Kurien & Willmann 2009).

Thus, definitions of SSF are usually based on common characteristics such as smaller boat size and limited technology (FAO 2005). Reflecting this, Bene (2006 p.5) state:

"*Small-scale fisheries can be broadly characterised as a dynamic and evolving sector employing labour intensive harvesting, processing and distribution technologies to exploit marine and inland water fishery resources*".

It is possible to identify some generic scale characteristics: SSF are characterized by "low capital input" activities, low capital investments and equipment, labour intensive operations, and, generally, relatively low productivity (Bene *et al.* 2015 p.2).

FAO[25] currently defines small-scale or artisanal fisheries as:

"*traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amounts of capital and energy, relatively small fishing vessels (if any), making short fishing trips, close to shore, mainly for local consumption. In practice, the definition varies between countries, e.g. from gleaning or a one-man canoe in poor developing countries, to more than 20-m. trawlers, seiners, or long-liners in developed ones. Artisanal fisheries can be subsistence or commercial fisheries, providing for local consumption or export. They are sometimes referred to as small-scale fisheries*".

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[23] *In theory, most fisheries are commercial to some extent, bartering or selling any fish and fish products surplus to individual needs (Chuenpagdee et al. 2006).*

[24] *Given that local trade and bartering are a feature of all small-scale fisheries there are likely very few truly subsistence fisheries (Berkes et al. 2001). However they are often mentioned synonymously with terms such as traditional and artisanal to engender a sense of communality where fishers utilise a range of craft skills and socially self-organised at the household to village level in contrast to large-scale mechanised industrial fisheries (for an extended discussion on the complexities of classification in small-scale fisheries see Johnson 2006).*

[25] *FAO. 2005–2016. Fisheries and Aquaculture topics. Small-scale and artisanal fisheries. Topics Fact Sheets. Text by Jan Johnson. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 27 May 2005. [Sighted 26 January 2016]. www.fao.org/fishery/topic/14753/en.*

Differentiating a small-scale fishery from a large-scale fishery is often not clear as, "a small-scale fishery in one country may be considered a medium-scale fishery in another" (Bene *et al.* 2015 p.2) (see Table 11.3.1).

Table 11.3.1: Characteristics of small-scale and large-scale fisheries.

Characteristic		Small-scale fisheries		Large-scale fisheries (industrial)
		Subsistence ← →	Commercial	
Physical	Size of boat and engine	None or small (5-7 m, <10 Gt); usually non-motorised	Small (<24m, <50 Gt) Low-power engine (15-400 HP)	Large (>24 m, >50 Gt) High-power engine (>400 HP)
	Gear type	Often hand-made Mainly non-mechanised	Often machine-made parts Manual and mechanised	Machine-made Mechanised and automated
	Catch capacity	Very low to low	Low to medium	Large
	Fishing location	Usually on or near shore	Usually relatively near to shore	All regions, often distant from shore
	Knowledge and technology	High skills and knowledge needs; manual gear	High skills and knowledge needs; some electronic equipment	Skills and experience supported by technology and electronic equipment
Socio-economic	Fishing unit	Individuals, family or community-based groups	Small groups, with some labour division and specialisation; household and community important	Small and large groups with higher specialisation and division of labour
	Nature of work	Mostly part-time or occasional	Full-time or part-time	Usually full-time or seasonal
	Ownership	Individually or group owned and operated	Usually owned and operated by senior operator; absentee ownership	Concentration of ownership, often non-operators; often corporate, some cooperative
	Capital investment	Low	Low to medium	High
	Factors of production	Labour intensive	Labour intensive	Capital intensive
	Disposal of catch and market integration	Household consumption Some local barter and sale	Household consumption Sale to local, national and international markets	Primarily sale to large, organised, integrated markets
	Utilisation of catch	Fresh or traditionally processed for human consumption	Fresh or processed for human consumption	Mostly processed, including fishmeal for non-human consumption
	Benefits	Direct consumption	Direct sale and employment	Direct sale, profits and taxes

Source: Compiled from Berkes *et al.* (2001); Chuenpagdee *et al.* (2006); Johnson (2006); The World Bank *et al.* (2012).

The number of small-scale fishers worldwide is impossible to identify due to the variable type of engagement and participation (which can be part-time or full-time, or on a seasonal basis, often in remote locations) and poor statistical records in general (FAO 2016b). Data compiled by FAO indicates that there were 35-40 million part-time or full-time small-scale fishers in 2012 (Bene *et al.* 2015; FAO 2016b) and up to 150 million ancillary fisher workers worldwide (FAO 2012), with more than 85% within the waters of Asia (FAO 2012).

Precise and regular harvest estimates for the small-scale sector are difficult to ascertain, but current evidence suggests that the small-scale sector is responsible for a sizeable proportion of world fisheries

production. For instance, a review of Thomson table[26] indicators (Mills *et al.* 2011a) suggests that roughly half of the global wild-capture production comes from SSF and a large proportion of those are located in tropical countries. Catch data for 2011 estimates the contribution of Asian small-scale marine fisheries at approximately 44% (34 million tonnes) of the total global marine catch of 79 million tonnes (FAO 2012). Given the highly dispersed and often remote rural nature of SSF in developing countries, these figures likely under-report and under-value the participation and landings, such that the actual contribution may be significantly higher than the data suggests (Zeller & Pauly 2006; de Graaf *et al.* 2011; Le Manach *et al.* 2012).

In many parts of the world, small-scale fishing takes place in environments which are degraded or where resources are heavily or over-exploited (FAO 2016c). One of the key drivers for this exploitation is inadequate governance and management of fisheries, particularly in tropical and developing countries (Jentoft & Chuenpagdee 2015; Purcell & Pomeroy 2015; FAO 2016c) which threatens the potential benefits to livelihoods provided by SSF to millions of people worldwide, including in Indonesia.

1.1 Small-scale fisheries in Indonesia

Indonesia is the world's largest archipelagic nation with some 17 508 islands and 54 716 km of coastline, and is the world's fourth most populous nation (247.5 million) (FAO 2014). Indonesia has a rich maritime history and among its ethnically diverse peoples there are long-established local coastal fishing and sailing populations with "clear claims to tenure". There are also migrant fishing populations who are either long-term fisher families, or seasonal migrants belonging most commonly to the 'Bugis-Buton-Makassar-Bajau' maritime populations of central and eastern Indonesia (Stacey 2007). Collectively, these populations account for significant numbers of artisanal fishers in these parts of Indonesia, targeting a range of pelagic (e.g. tuna, mackerels, sardines) and demersal species.

Indonesia is one of the highest fish-producing countries in the world, currently second to China in capture fisheries production (FAO 2016b). The FAO estimates that in 2014 Indonesia's marine capture fisheries production was just over six million tonnes and its' total aquaculture production was 14.3 million tonnes (including 2.8 million tonnes from inland aquaculture) (FAO 2016b).It is recognised that capture fisheries in Indonesia are largely at capacity or over-exploited in some fishery management areas[27], while the aquaculture and mariculture sectors have been rapidly expanding over the last decade (Rimmer *et al.* 2013). Fisheries in Indonesia are important as a source of cheap protein for humans and an ingredient in animal feed, and play an important role in local, regional and international trade (FAO 2014). Indonesia has one of the world's highest rates of seafood consumption. About 54% of the animal protein supply in Indonesia comes from seafood (FAO 2016b). Annual consumption per capita was 28.9 kilograms in 2011, compared to global consumption of 19 kilograms per year in 2014 (FAO 2014). In a household survey of seafood consumption in Indonesia in 2011 it was reported that fish and fish product consumption was 12.8 kg per capita per year, representing 16.4% of total protein consumed (Needham & Funge-Smith 2014). However, fish consumption patterns vary based on location and cultural preferences; for example consumption levels ranged from 26.4 kg per capita per year in Maluku in the eastern part of the country to 4 kg per capita per year in Yogyakarta (Needham & Funge-Smith 2014). In a study on fish consumption and

[26] *The original Thomson table published in NAGA/ICLARM Newsletter 3 (Thomson 1980) contained a seminal series of comparative indicators used to assess the relative contributions of both large- and small-scale capture fisheries. These indicators are still highly relevant and often used in current comparisons of this nature (See FAO and WorldFish 2008 for a comparison of updated Thomson table indicators from the current literature).*

[27] *Indonesia's Fisheries Law (Act No.31 of 2004, amended by Act No.45 of 2009) and Regulation (Regulation of the Minister for Marine Affairs and Fisheries No.1 of 2009) divides Indonesia's maritime waters into 11 fisheries management areas to allow for sustainable management of fisheries resources and the environment.*

food security in selected Asian countries, including Indonesia, Dey *et al.* (2005) found that pelagic and demersal marine fish were the main contributor to per capita fish consumption in Indonesia, and that per person annual fish consumption increased with income, with lower income households spending a greater proportion of their income on food and consequently on fish. This indicates that for lower income or poorer households in Indonesia fish is important for food security.

In Indonesia, approximately 95% of fishery production comes from artisanal fishermen (FAO 2014). The FAO estimates there are over six million people involved in fisheries in Indonesia, with around 2-2.5 million people involved in SSF and fish farming (FAO 2016b). Just over half of these people are reported as full-time fishers and the others are either part-time or occasional fisheries (FAO 2015a), based on fishers who use small boats (less than 5 GT). The FAO Indonesian Country Profile reported that in 2009 there were 2,641,967 people involved in capture fisheries, 2,493,193 people involved in aquaculture and 1,171,981 people involved in processing and marketing, totalling 6,307,141 people (FAO 2014). In 2014, it was estimated that 2,667,000 people were employed in capture fisheries and 3,344,000 in aquaculture (FAO 2016b) with 1.7 million households directly involved in this livelihood activity (Rimmer *et al.* 2013, citing 2011 data), showing major increases in aquaculture.

The Indonesian Government's Central Bureau of Statistics ("BPS") classifies fishers based on the amount of time spent fishing: (i) full time fishers, who spend all of their working time fishing; (ii) part time (major) fishers, who spend the majority of their working time fishing but may have other livelihood activities; and (iii) part time (minor) fishers, who spend a minor part of their working time fishing (Fitriana & Stacey 2012). Information is also collected on the gear used (such as types of boats, canoes, motorised, non-motorised) by household, the species caught, and the total fish production (Stacey *et al.* 2011).

The estimates of participation in SSF do not necessarily account for all those involved in different components of fisheries value chains, nor those in small-scale mariculture and fish farming. Stanford *et al.* (2013) highlighted the need for improvements in statistical reporting for fisheries in Indonesia, although it is acknowledged that there is a lack of human resources available to do this.

For this review, characteristics of SSF (and their fishers) in Indonesia can be summarised as:

- Artisanal, small-scale, subsistence, family-owned, inshore, migratory (i.e. travelling up to 100 km or more offshore), small boat, commercial, or traditional fisheries.
- Low capital input activities with small investments and minor equipment), and labour intensive operations with relatively low productivity (Bene *et al.* 2015 p.2).
- Operate from shore or small vessels (sail or motor powered) using manual and/or low-technology/labour intensive gear (e.g. nets, lines, diving, gleaning) but increasingly using modern technologies such as GIS, sounders and VHF radios.
- Target a range of species of fish (small and large pelagic and demersal species, coral reef associated species, invertebrates, molluscs).
- Interact with a variety of the marine ecosystems and habitats, including the littoral zone/beach, tidal flats, coral reefs, sea grass beds, inshore sea areas, mangroves, and also offshore ocean areas.
- Fishing activities are mostly organized at the household or community level, however some SSF are part of fleets, controlled by middle men. These are largely self-employed and operated in the informal sector (Bene *et al.* 2015).

- Involves men and women in distinct aspects of pre-production, production and post-production/post-harvesting (i.e. as fishers, boat crew, fish processers, fish retailers, and fish farmers). The division of labour is often characterised as males engaging in seagoing and fishing activities and women participating in near-shore harvesting, gleaning and post-harvest processing and local trading – but in reality, it is far more complex.

- The catches are mostly for domestic consumption and trade, but some products are destined for export for international markets (e.g. shark fin, trepang, trochus shell, seaweed).

2. Small-scale fisheries contribution to households

In recent years, increasing global attention has focused on the important contribution of SSF and fish to the many varied and diverse aspects of livelihoods, poverty alleviation and well-being at the individual, household and community levels. This includes their important role as a source of nutritious food (Bene *et al.* 2005; Bene *et al.* 2010; Hall *et al.* 2013; Thilsted *et al.* 2016), income and employment (Allison & Horemans 2006; HLPE 2014; Bene *et al.* 2015; Bene *et al.* 2016), poverty alleviation (FAO 2005), cultural and aesthetic values (McGoodwin 2001), and well-being (e.g. Weeratunge *et al.* 2013). SSF can also contribute indirectly to food security by generating household income which can be used to purchase other foods (Kawarazuka & Bene 2010).

The contribution of SSF to food and nutrition security has gained renewed attention, with acknowledgement that "the contributions of small-scale operators are often of greater importance to food security than economic accounting would indicate" (FAO 2016b p.32). However, to date there has been limited research into the contribution of fish to food security in part due to a dominant focus in fisheries research on economic efficiency and biological sustainability (HLPE 2014; Bene *et al.* 2015; Thilsted *et al.* 2016).

Fish, produced from capture fisheries and aquaculture, plays an important role in food and nutrition security, as a purveyor of food (availability), livelihoods and income (accessibility), and provides essential micronutrients (utilisation) (HLPE 2014). In coastal communities, where fisheries are central to local economies, fish provide more than 60% of total dietary protein (HLPE 2014).

There is also recognition that small-scale fishers are particularly vulnerable to poverty due to their dependence on natural resources and high exposure to the impacts of various socio-political, economic, and ecological shifts and/or shocks (tsunami, family illnesses, price drops) (Allison & Horemans 2006; Bene & Friend 2011; Stanford *et al.* 2014; Adhuri *et al.* 2016). The literature also notes the linkages between vulnerability, marginalisation/social exclusion/discrimination and poverty in SSF (Bene 2003; FAO 2004; Every 2016).

Despite increasing attention at the global level to contributions of SFF, there is a general lack of data quantifying their contributions at the household level through national statistic/census collections (Mills *et al.* 2011a; Bene *et al.* 2016). Consequently, SSF continue to be under-valued and marginalised which often prevents the full realisation of benefits from these fisheries (Mills *et al.* 2011a; FAO 2015b). It is also suggested that the contributions of small pelagic fisheries to food security and sustainable livelihoods have been neglected, particularly in tropical developing countries, due to the dominant agendas of conservation-orientated organisations (and funding bodies) which focus on coral reef habitats and marine protected area ("MPA") networks (Foale *et al.* 2013).

Further and importantly, the underreported and often invisible role of women in small-scale fish production and value chains (Weeratunge *et al.* 2010; Kleiber *et al.* 2014) may mask important contributions by women to household food security and livelihoods (Andrew *et al.* 2007; Harper *et al.*

2013). These uncertainties highlight the need for integrated context-specific case studies to unpack the role of SSF and identify appropriate support that enhances their contribution to rural lives.

A detailed review of the literature examining the contribution of SSF to households, with attention to gender, is provided in the following sections.

3. Gender and small-scale fisheries

Gender is widely acknowledged, in articles, books, reviews and reports published, as a key issue in SSF, with gender directly impacting access to and control over livelihood assets (including natural resources) and influencing the nature and distribution of benefits from both fisheries and aquaculture (Choo *et al.* 2008; FAO 2005; Williams 2008; Weeratunge *et al.* 2010; Pomeroy & Andrew 2011; Matthews *et al.* 2012; Harper *et al.* 2013; HLPE 2014; Kleiber *et al.* 2014; Bene *et al*, 2015; Bene *et al.* 2016; FAO 2016b; Thilsted *et al*, 2016).

Gender in the context of fisheries and the environment refers broadly to the distinct roles, rights and responsibilities of men and women as determined by social and cultural norms rather than biology. *Gender relations* can influence fisheries in 4 primary areas: i) roles and responsibilities, ii) access and control of resources, iii) knowledge base, and iv) decision making.

It is important to note that the role of gender often conflates women and other vulnerable and marginalised groups. While "women have been the more consistently ignored gender" in development programming (Colfer *et al.* 2015, p. 148), women are by no means a homogenous group and other vulnerable and marginalised groups in society include indigenous peoples, landless and poor men and women, people with disabilities, and the elderly.

A small component of the literature also draws attention to hegemonic masculinities, and the implications of changing gender roles and identities (Correia & Bannon 2006; Jacobsen 2006; Locke *et al.* 2016). Thus, because gender is a dynamic relational concept, failure to understand gendered social relations can undermine activities aimed at women, rendering such activities ineffective, and at worst make women susceptible to harm (Bannon & Correia 2006; Porter & Mbezi 2010; World Bank 2012; Duvvury *et al.* 2013).

Gender has, until recently, typically been neglected in fisheries research and there is still limited engagement of feminist theory with fisheries, aquaculture and the natural resources management (NRM) literature (Porter 2012). Porter (2012) argues that because few studies have explored the contribution of women to fisheries and these have been small-scale and very context specific, it is now necessary to develop common frameworks, focusing on power, inequality and discrimination, and the ways in which women can be empowered. This recommendation is being explored by the literature and applied research on gender transformative approaches (see, for example, Cole *et al.* 2014; Hillenbrand *et al.* 2014; Hillenbrand *et al.* 2015).

The recent launch of the SSF Guidelines (FAO 2015b), and other initiatives to enhance statistical reporting by FAO (Gee 2015), should contribute to improved reporting on gendered participation in SSF.

3.1 Women's roles in small-scale fisheries

Women's roles and their contribution to household food and nutritional security and their knowledge and use of natural resources are largely unrecognised and under-valued. Consequently, there is lack of consideration for women in fisheries policy development and decision-making (Weeratunge *et al.* 2010; Mills *et al.* 2011a).

Globally, the contribution of women to food and livelihood security and regional economies through their participation in fisheries and aquaculture (for subsistence or commercial purposes) has been significant (HLPE 2014). In 2014, globally women were estimated to have make up 19% of all people directly engaged in the fisheries and aquaculture primary sector, 90% of those engaged in processing activities (secondary sector), and half of the workforce when participation in the primary and secondary sectors is combined (FAO 2016b). However as noted above women's participation, often in the informal sector as low-paid or unpaid workers with unofficial status, is generally not represented in government census data (Mills *et al.* 2011a; FAO 2016b). Furthermore, definitions of fishers, fishing etc. often exclude women who fish by gathering and gleaning, and work in processing and post-harvest activities (Harper *et al.* 2013; Alami & Raharjo 2017).

Women fulfil roles throughout SSF value chains: in pre-production (e.g. making and repairing nets, collecting bait, tying seaweed, feeding shrimp, and provisioning), as producers (e.g. reef gleaners, divers, inshore fishers), as processors (e.g. in processing plants, drying and salting fish), and as small-scale fish traders and vendors at local markets (Bosma *et al.* 2012; Fitriana & Stacey 2012; Every 2016). However, these roles are typically situated at the lower end of value chains, as home-based producers or small-scale processors and traders in local value chains (Weeratunge *et al.* 2012).

Women's participation is mediated by a range of factors including species targeted, dominant fishing method, habitat exploited, socio-cultural norms and religious beliefs, such that women's roles vary depending on the geographic context (Mills *et al.* 2011a; Kleiber *et al.* 2014). For example, women's participation in fishing and post-harvest activities are estimated at 73% of the workforce in Nigeria, but only 4% in Mozambique; and women constitute 72% of the SSF workforce in India but only 5% in Bangladesh where societal/religious norms discourage women from engaging in fishing or fish marketing (Mills *et al.* 2011a). Further, Kleiber (2014) found that women comprised 42% of fishers in a Central Philippines fishery. While the literature focuses on coastal and marine fisheries, Mills *et al.* (2011a) report that the majority of developing country SSF workers operate in the inland sector, despite the fact that yield from inland fisheries is less than 20% of the estimated total. Women are estimated to represent 33% of the rural aquaculture labour force in China, and between 42 and 80% of this workforce in Indonesia and Viet Nam (Harper *et al.* 2013).

Contrary to conventional thinking, "women do fish" (Weeratunge *et al.* 2010), and Siar's (2003) gendered finding that "*shells are for women, fish are for men*" illustrates the division of fish harvest and habitats exploited in many geographic contexts. Nearshore habitats such as estuaries, mangroves and intertidal flats are typically women-only or shared spaces, while reef edges and pelagic offshore habitats tend to be exclusively fished by men (Kleiber *et al.* 2014). Thus, men tend to dominate extractive fisheries processes (that is, the harvest of finfish), while women are reported to harvest small fish and invertebrates using small cast or lift-nets and by gleaning (Mills *et al.* 2011a; Matthews *et al.* 2012). Gleaning, categorised by some researchers a "gathering" or "collecting" rather than "fishing" activity (Broch 1988), has been regarded as the exclusive domain of women and children (Siar 2003), however gleaning is an important activity for both for women and men (Broch 1988; Williams 2015b). Women's participation in gleaning is related to spatial and temporal limitations on their activities due to multiple roles; it is, for example, often done close to home, requires no special equipment and can be done by or with children (Kleiber *et al.* 2014). These limitations can however exclude women from higher value commercial fisheries (Pinca *et al.* 2010; Porter & Mbezi 2010). Thus, while traditional boundaries do exist in some countries between division of labour and participation of men and women in fishing, in others these are blurred, particularly in Indonesia with a large rural coastal population and maritime-dependant populations.

Women are actively involved in fish trading in many regions. In the Congo, for example, 80-90% of fish traders are women (Harper *et al.* 2013). Women often receive and then sell or trade their husband's catch; women's social networks are important, enabling women to gain credit towards

other household goods at favoured stores. In some parts of West Africa moneyed women own boats and engage men to harvest fish which the woman then trades; women also provide market credit to fishermen through patron-client relationships, and provide provisions such as ice, bait and salt (Harper *et al.* 2013). Women also dominate processing activities. At the village level, women are involved in drying and salting fish, as well as making fish paste and cakes, activities that are important in remote fishing communities where cold storage and transport infrastructure are poor and spoilage rates can be as high as 50% (Matthews *et al.* 2012). In Indonesia, the growth of the larger scale processing sector has provided opportunities for women, whose fine motor skills are favoured for tasks such as peeling shrimp and in pearl culture (Gaynor 2010); however, these women are considered unskilled and thus receive the lowest wage category (Harper *et al.* 2013); women are also reported to receive less pay than men for the same work, while both genders are vulnerable to lack of social protections (Harper *et al.* 2013).

Small-scale fishers (both men and women) engage in an array of economic relationships to obtain money and provisions to perform livelihood activities. These relationships can involve asymmetrical power relations between fishers and others involved in value chains, for example patron-client relationships between bosses and fishers, fishers or fish traders and middlemen, and between fishers, traders and money lenders (Every 2016). In some cases, these relationships can create financial and social vulnerabilities in SFF communities (Stacey 2007; Crona & Bodin 2010; Crona *et al.* 2010; Ruddle 2011). However, in other cases such relationships have important social and cultural functions in SSF communities such as reciprocity and social-moral obligations, and in providing a safety net for households in hard times (Acheson 2003; Ruddle 2011).

Gendered access to financial capital in Indonesian SSF

It has been reported that small-scale fishers in Indonesia have difficulty accessing financial capital; formal credit avenues are out of reach because fishers lack the requisite collateral (Stanford *et al.* 2014). Typical livelihood intervention programmes in Indonesia focus on the provision of equipment to improve asset portfolios, however the failure to address accessibility of financial capital limits agency and mobility within fisheries activities, even in Indonesia where women often have a high level of control over their income (Upton 1991; Every 2016). Every (2016) investigated the vulnerability of women fish traders in Flores due to dependence on money lenders to fund their livelihood activities. This dependence on credit obtained through money lenders resulted in profit erosion from fish sales and increased their exposure to other livelihood shocks and social marginalisation. Anna (2012) also noted that high dependence on local credit financiers contributed to uncertainties in women's coastal livelihood strategies in Java.

Micro-credit loan and saving schemes have been implemented as part of some development interventions in Indonesia. For example, Anna (2012) found that Javanese fisherwomen participate in community savings groups to help obtain the financial means to support basic household needs during lean times and to cope with troughs in incomes. Further, Brock (2013) identified some issues with these loans: e.g., microcredit loans offered as part of the COREMAP programme in the Spermonde Archipelago, South Sulawesi, were used for purposes inconsistent with the programmes objectives (i.e. to purchase fishing equipment), were too small to facilitate the development of alternative livelihoods because of limited education and market access, and that the socio-cultural environment hindered regular repayments.

Women in some SSF communities regularly access financial capital to fund fish trading activities (Udong *et al.* 2010; Matthews *et al.* 2012; Stanford *et al.* 2014). This capital is often sought through private money lenders, bosses, or cooperatives, sometimes through actively sought social networks (Pauwelussen 2015), as credit cannot be obtained through formal mechanisms.. These funds can also be used to support general household needs, such as the purchase of food basics in times of low income (Nguyen 2012). Some studies have shown that micro-credit programs for SSF have been

successful in poverty reduction and empowering women fish vendors (e.g. Harper *et al.* 2013); however, observations indicate that in some poorer contexts, fishers do not generate enough income to qualify for micro-credit loans (FAO 2007; Williams *et al.* 2012; Gopal *et al.* 2015). In general, research indicates that gendered differences in accessibility of financial capital disadvantages women (Drury O'Neill & Crona 2017) (*See Gendered access to financial capital in Indonesian SSF*).

In summary, the literature demonstrates substantial awareness of the different roles and activities of men and women in SSF. However, fewer studies have explored the social structures and power relations resulting in the differences in access to, and control over, the livelihood assets of men and woman. These differences in gender roles have important implications such as, the ability to participate in governance and policy, the social-ecological resilience to change in global processes, and the environment and livelihood sustainability (Frocklin *et al.* 2014; Gopal *et al.* 2015; Bene *et al.* 2016; Kawarazuka *et al.* 2016).

3.2 Woman's activities in small-scale fisheries in Indonesia

Women are active participants throughout SSF value chains across Indonesia, where coastal fishers practising traditional fishing are often among the poorest in Indonesian society (Siason *et al.* 2002). As reported in a recent paper by Ariadno and Amelina (2016), based on data obtained from the MMAF in 2011, 95% of Indonesian fishers are small-scale operators in the fishing business and 42% are women. Female participants in fisheries are usually the wives or daughters of fishers, and their contribution is critical to these families. They provide much needed land-based labour for trip preparation, processing and sale of caught fish, as well as supplementing family incomes from other activities (Siason *et al.* 2002). Despite the high level of participation, as women in Indonesia are poorly represented compared to their counterparts in other parts of the world, in governance, marine resource and habitat management, and planning processes.

Women's work in SSF and associated value chains is often not recorded and the data available doesn't comprehensively account for women's diverse roles (i.e. in capture fisheries, gleaning, aquaculture (e.g. brackish water ponds (*tambak*), mariculture (e.g. floating cages and seaweed farming)[28] and trade) (see below). Research on women and SSF in Indonesia is also limited with literature confinedto the identification of men's and women's activities or roles in fishing, aquaculture and mariculture, with only a few comprehensive gender analysis studies of fisheries. These are listed in Appendix 1.

Gleaning and capture fisheries

Women's participation in small-scale gleaning and capture fisheries is poorly recognised by the Indonesian government (Fitriana & Stacey 2012). Fishers, gender-neutral *nelayan* in Bahasa Indonesian, are defined under the Indonesian Fisheries Law No.31/2004[29] as "a person whose way of living is catching fish". A fishery (under Republic of Indonesia Law No.45/2009, amending Law No.31/2004) is defined as "an activity related with the management and utilisation of fish resources and its environment from pre-production, production and processing up to its marketing performed in a *fishery business system*"[30] (author's emphasis), necessarily excluding subsistence and informal fishing activities. Thus, while women's activities in a fishery could be recognised under this definition of a fishery, especially in pre-production and post-harvest activities, this excludes women who fish by gathering and gleaning. Fisheries-related data collected for each province, regency and sub-district

[28] *See Rimmer et al. (2013) for a detailed review of aquaculture in Indonesia.*

[29] *Indonesian Fisheries Law No.31/2004 (as amended), at Article 1 subsection 10.*

[30] *Republic of Indonesia Law No.45/2009, amending Law No.31/2004). A minor fisherman, "a person whose way of living is fish catching to meet his daily living requirements using a fishing ship with a weight of not more than five (5) gross ton" (Article 1, subsection 11), is excluded from the requirement to have a fishery business permit.*

focuses on the number of fishers employed in the fishery sector on either a full-time (all of working time), part-time major (majority of working time but additional livelihood activities) or part-time minor (minority of working time) basis (Fitriana & Stacey 2012). Information is also collected on the gear used (such as types of boats, canoes, motorised, non-motorised) by household, the species caught, and the total fish production. Women's informal and fishing-supporting activities are regarded by district level administrators as part of their reproductive roles in supporting their household, and thus most women fishers are not counted in the national government's census programme (Fitriana & Stacey 2012).

Women's participation in gleaning and capture fisheries varies geographically and is influenced by socio-cultural norms. Matthews *et al.* (2012) report that in Aceh, it is taboo for women to participate in fishing activities or to be involved in decision-making at the village level. Nearshore resources are managed according to the traditional *Panglima Laot* ("commanders of the sea") system and women are responsible for household management, although a small portion do participate in fishing. In contrast, Sama-Bajau men and women are highly respected for their fishing prowess (Stacey 2007), such that it is acceptable for a Bajau women to fish within a community that normally shuns women's participation (Broch 1988).

Women play a key role in the fishing economy across Indonesia:

- In Madura, a strict gendered division of labour is observed, with men catching fish and women managing patron client relationships in which they finance fishing activities and market fish (Niehof 2007).

- In Northern Java, women provide logistical support for their fishing relatives and husbands, as well as dominating fish selling, distribution and processing (Anna 2012).

- In North Sulawesi, women are active as gleaners and fishers, where their activities significantly add to family incomes (Anna 2012).

- In Pulau Pantar, Nusa Tenggara Timor, women glean and fish in mangrove, intertidal and inshore coastal areas; they participate in post-harvest activities such as the processing and sale of fish and mussels (Fitriana & Stacey 2012). In Flores, women are active participants in a small scale pelagic purse seine fishing as crew and in fish trading and processing (Every 2016).

Women and children also play significant roles in sea cucumber fisheries through gleaning at nearshore sites (Schwerdtner Manez & Ferse 2010; Purcell *et al.* 2013).

Depending on location and ethnicity, women from lower socio-economic groups are traditionally involved in the marketing of fish. Women actively engaged in fish marketing in Bali but men carry out fish marketing in South Sulawesi (Siason *et al.* 2002).

There are several women-exclusive fisheries in Indonesia. In Arguni Bay, West Papua, women have traditionally engaged in the harvest of mangrove mud crabs for subsistence and income generation, and efforts are underway to improve the value chain for this fishery. In Berau, East Kalimantan, marginalised Bajau women glean for giant clams (a prohibited species) and cultivate networks, through which trade is negotiated across borders (Schwerdtner Manez & Pauwelussen 2016). This fishery results in substantial biomass being removed from the near-shore reef but is not acknowledged by local fisheries managers, perhaps in recognition of its importance to Bajau livelihoods.

Women's participation in processing activities is linked to socio-cultural factors, particularly regarding women's reproductive role. Processing activities can be accomplished in the presence of small children and in close proximity to households (Upton 1991). Processing activities are also social in

nature, allowing women to talk, exchange stories and discuss information on important community matters while they work (Upton 1991).

Women are employed as manual workers in small and medium scale seafood processing operations located close to fish landing sites (Siason *et al.* 2002). These factories produce products such as salted-dried, salted-boiled, smoked, fermented products, fish/shrimp crackers, frozen fish, canned fish and fish meal. Canning and fishmeal factories provide employment opportunities for young women from non-fisher households, yet increased commercialisation and mechanisation has resulted in a decrease in the number of women engaged in fisheries-related jobs such as in the canning industry, transportation, shipping and net-repairing (Siason *et al.* 2002).

Gendered participation in SSF in Indonesia was recently summarised by Koralagama *et al.* (2017) (see Table 2 below).

Table 2: Gender division characteristics of small-scale capture fisheries in Indonesia

Category	Female fishers	Male fishers	Notes
Technology	Low input, unmotorised	Low, medium and high; unmotorised and motorised	Depends on target fish, grounds and economic or patron-client relations
Fishing location	Near shore	Near shore and offshore	Choices depend on accessibility, ability to attend home affairs, severity of the fishing operation due to weather, available opportunities, scale of operations
Target fish	Mostly invertebrates but also smaller species	Mostly fin fish and valuable invertebrates	Choices depend on accessibility, ecosystem, value, quantity, fishing technology, scale of operations, In Indonesia there is less distinction by-catch among some coastal populations
Work	Less risky	More risky	Choices depend on fishing technology, distance from the shore, sea condition, responsibilities, obligations, working conditions
Investment	Self-funded	Self-funded and Patron-client dependant	Patron client relations operate for more valuable products
Utilisation of catch	Household consumption and sale to local markets	Sale to local, regional and international markets	
Income	Main/supplementary	Main	Depends on fishing duration, culture, household condition (male/female headed, marital status), quantity, household economy, vulnerability, policy changes
Engagement	Pre- and post-harvesting, production	Pre-harvesting and harvesting	Depends on home affairs, demographic factors (age, marital status, and age of children) commitment, working hours, culture, safety
Fishing time	Day time	Both day and night	Women also fish at night in some cultures
Relationship with and participation with the governing system	Poor	Good	But many males also have limited engagement Mostly male officers govern the fishing institutions and communication process

Source: Adapted from Koralagama *et al.* (2017).

Aquaculture and mariculture

Indonesia's aquaculture industry is characterised by a high proportion of small-scale farmers, with aquaculture pursued as part of a diversified set of household livelihood options (Rimmer *et al.* 2013). Small-scale aquaculture is interpreted as farms of less than or equal to 2 ha operating in extensive, semi-intensive or intensive aquaculture systems (Phillips *et al.* 2016). The Big Numbers Project (involving FAO and WorldFish) reports that 2.4 million households were involved in the aquaculture industry in 2009; of these 54% were engaged in freshwater pond farming, with 64% of households owning less than 0.1 ha of land, and a further 24% operating rice-fish farms and 16% brackish-water ponds (Phillips *et al.* 2016). An estimated 150 000 households are involved in mariculture (Phillips *et al.* 2016).

Women are more likely to be involved in aquaculture if the activity is a small-scale business involving low technical inputs, and with the harvest mainly for home consumption or sale to neighbours (Siason *et al.* 2002). Women generally carry out routine, non-technical activities passed on to them by family members; according to Siason *et al.* (2002) women lack the highly technical skills and basic understanding on ecological and biological requirements of intensive commercial systems, yet they are often unable to attend government-facilitated extension courses because of their reproductive roles. Sari and McDougall (2016) report that participation in homestead milkfish processing industries is high as they provide significant opportunities for women, while lower rates of participation in shrimp farming are due to perceptions about the physicality of the work (Sari & McDougall 2016).

Generally, women are engaged in aquaculture-related activities such as construction of fishing equipment, drying and salting fish, and peeling of shrimp (Bosma *et al.* 2012). Women are often responsible for feeding (an unpaid task), or are employed to grade and count fingerlings, and are sometimes engaged as brokers for fingerling sales (Rimmer *et al.* 2013). While aquaculture is promoted as a poverty-reducing alternative livelihood activity, high entry costs (e.g. land for ponds) can exclude the poor. Siason *et al.* (2002) report that the intensification and commercialisation of aquaculture has led to decreasing involvement of women.

Women are involved in many aspects of mariculture and in particular seaweed farming. Fitriana (2016) reported that seaweed farming in NTT is predominately a family enterprise, supplementing women's other productive and reproductive roles. Women work in conjunction with their husbands and children throughout the preparatory, growing and harvest processes, but have greater responsibility for tasks such as tying and untying seedlings, and collecting fallen seaweed. Similarly, Blankenhorn (2007) notes that in South Sulawesi land-based work such as preparation of culture ropes, and seedling and harvest processing, was mainly done by women and children.

Inland fisheries

There is limited information available on inland fisheries in Indonesia. Kartamihardja and Koeshendrajana (2010) report a substantial number, more than 26,000, of small-scale hatcheries owned by individuals or farmer groups, predominantly use traditional technologies, and produced lower volumes and quality brood stock than government hatcheries. They also noted that stock enhancements were generally implemented without planning for long-term benefit, which resulted in a decline in the benefit to fishers after a year or two. A study of small-scale fishing at Singkarak Lake in West Sumatra, found that all members of the household were involved in fishing activities, but that women were predominantly responsible for supporting tasks, such as collecting fish from nets, processing fish (cleaning, packaging in hand-made baskets with ice) and marketing the fish (Yuerlita 2013).

Mangrove ecosystems

Mangroves are known to provide a wide range of ecosystem services that support diverse livelihood strategies in coastal communities. These include small-scale fishing, aquaculture, and harvest of timber for construction, firewood and charcoal. Mangrove forests also provide a variety of subsistence resources including food stuffs (e.g. fruits, honey, sugar), fodder, and medicine (Walters *et al.* 2008). Economic valuations of productive mangrove ecosystem services have indicated varying levels of importance for household income, ranging from 14.5 to 30% for better off versus poor households respectively in the Bhitarkanika Conservation Area, India (Hussain & Badola 2010), compared to 21 to 42% in Sri Lanka (Emerton 2007), and up to 74% and 80% for poor households in the Bangladesh and Indian Sundarbans respectively (Singh *et al.* 2010; Abdullah *et al.* 2016).

A limited number of studies have explored the livelihoods strategies in mangrove-dwelling communities in Indonesia, with the focus generally on livelihood strategies associated with small-scale coastal fisheries and aquaculture. For example, Bosma et al. (2012) found that households in the Mahakam delta (East Kalimantan) engaged in a range of livelihood activities, including fishing, catching mud crabs, *tambak* pond farming, and as pond caretakers. They calculated that 40% of the livelihoods activities were related to mangrove ecosystem provisioning services, rising to 80% if pond farming was included. Women in the study communities adopted diverse livelihood strategies, engaging in the preparation of dry salted fish, baking and selling cookies, and a range of *tambak* related activities. Other studies highlighted the significance of patron-client relationships in governing access to resources and trade networks, and addressing destructive environmental practices (Ferse *et al.* 2012; Kusumawati *et al.* 2013; Nurdin & Grydehoj 2014) . For example, absentee pond owners ("*ponggawa"*) enter into agreements with local pond caretakers, who can obtain capital from the *ponggawa* for pond development, but who are then in turn obliged to sell the pond harvest to a processing company that sets the 'farm gate' price and pays the *ponggawa* a commission. Nurdin and Grydehoj (2014) describe a similar network in the Spermonde Archipelago, where fishers are locked into a cycle of indebtedness to *ponggawa*, who are alleged to supply the materials that support destructive fishing practices, such as bombing and use of poisons, which bring in higher catches.

A handful of studies have sought to include gender issues in their assessment of mangrove-associated livelihood strategies, typically identifying the type of activity undertaken or the marketable resources harvested by men and women respectively. Armitage (2002) found that men harvested a greater variety of mangrove resources than women in several Central Sulawesi communities, with men engaged in the harvest of firewood and charcoal and both men and women involved in fishing activities. Fish species harvested included milkfish, grouper, rabbitfish, mullet and emperor fish. Similarly, Furukawa and colleagues (2015) identified gendered differences in the use of resources in communities in South Sulawesi and Maluku, with men having knowledge of resources for construction and women having greater knowledge of resources for medical purposes. However, these studies have not quantitatively assessed the contribution of subsistence mangrove resources harvest by men or women in mangroves. The distinction between resources harvested for sale, barter or subsistence is important because women's harvesting activities are often centred on provision of food for the family and therefore is important for nutrition and food security. Further, a household's ability to harvest resources from common resources is a cash saving to the household and may provide poor households with a safety net in times of stress (Shackleton & Pandey 2014; Wunder *et al.* 2014).

The ability of mangrove-dwelling communities to maintain a livelihood has been impacted by a decline in resources due to mangrove forest degradation and the limited lifespan of *tambak.* To alleviate these pressures government agencies and non-government organisations have partnered to implement environment-livelihood programs in communities across Indonesia. These programs have often combined an environmental objective (rehabilitation or restoration of mangrove ecosystems) with a livelihood objective (either seeking to enhance an existing livelihood strategy or to develop an alternative livelihood strategy). Recent examples include:

- The *Let's Plant Mangroves* programme in Central Java. This combined mangrove replanting with training in new or enhanced livelihood opportunities, such as a mangrove seedling nursery, improved milkfish post-harvest processing and processing of mangrove food products such as cakes (Mahardi 2012).

- The *Mangrove for the Future's* community resilience programme. This involved small projects combining mangrove replanting (less than 5 ha) with livelihood diversification activities, primarily for women (Mangroves for the Future 2016). Projects were partnered with local NGO's, and livelihood activities included mangrove crab rearing, milkfish farming, mangrove and fish based food production (e.g. fish floss, mangrove cakes) and harvest of nypa sugar. A 17-member women's group in Kraksaan Subdistrict of Probolinggo, East Java, which made a net profit of approximately A$630 per month from producing herbal tea, rice crackers and mangrove-based cookies (*ibid*), is an example of a reported outcome from this programme.

- The *Coastal Community Development Project.* This is currently operating in 108 villages and has instigated the development of a range of community-based groups focussed on coastal resource management, community enterprises, and savings (IFAD 2015). The enterprise groups include capture fisheries groups, processing groups, aquaculture groups and marketing groups; women have the highest participation in processing groups where they have received training in fish-based food processing, with plans to upscale this to include mangrove-based food processing. Many of the groups have been supported by the provision of equipment (e.g. boats, motor cycle trolleys, ice and fish containers) to enable storage and transport of harvested resources to markets. Provisional outcomes include improvements in poverty rates, increased asset ownership and a trend towards diversified income sources.

- The *Coastal Farmer Field School*. This approach has been led by Blue Forests, an NGO based on Makassar, Indonesia. This has proven beneficial to improving pond based livelihoods in Sulawesi. (Brown 2013).

Many of the livelihood studies in Indonesia have, to date, not recognised the important contributions of women to household livelihoods, nor explored the gendered socio-cultural and institutional contexts of mangrove-dwelling communities. Socio-cultural norms and customs may be a barrier to women's access to resources, agency and achievements (Kabeer 1999); while the inability of women to effectively participate in institutions and processes, such as intra-household negotiations, community meetings or village planning processes, may mean that their needs and priorities are not reflected in decision-making about socio-economic development activities or the management of mangrove forests (Mai *et al.* 2011). Gender analysis is essential to understanding the power relations within households and communities, as well as interest in and dependence on and access to resources (*ibid*).

Evaluation of livelihood programmes is often compiled by the implementing partner, done immediately after the activities have been completed, and limited to quantitative reporting (e.g. no. male/female participants, no. of mangrove crab cages distributed, no. of mangrove seedlings planted). Detailed evaluations of programme outcomes, assessing factors such as durable impact following the withdrawal of financial and technical support, and change in social equity, is rarely available. The literature highlights the importance of early and effective community participation in programme design and implementation, as well as post-project support. For example, Amri (2005) reports on several mangrove replanting projects in South Sulawesi where communities perceived no economic benefit from a replanted forest and harvested the timber; while Bagsit and Jimenez (2012) highlight the challenges of combined environment-livelihood community programmes in the Philippines, with support for the environmental component waning after the livelihoods component failed.

3.3 Women's fishing and its contribution to livelihoods

Fisheries generate material benefits such as food produced or purchased, income, and employment, and also support diversified livelihood strategies, providing a labour buffer as people move in and out of fishing activity depending upon other opportunities (Bene *et al.* 2016). In a recent global assessment, Bene *et al.* (2016) report a lack of precise information about the role of fisheries at the individual and household levels., with household livelihood typologies illustrating the dynamic nature of fisheries-based livelihoods: for example "farming fishers" versus "fishing farmers" (Yuerlita *et al.* 2013); or "part of a diversified accumulation strategy" versus fishing as "a primary livelihood of last resort" (Smith *et al.* 2005). Studies also typically focused on the household head, camouflaging women's participation in SSF and their important role within household economies. However, women's contribution (direct and indirect) to the economy and food security through their participation in and support of SSF is often overlooked.

Gleaning as a source of food and income

Women make important contributions to food and nutrition security in coastal fishing communities through reef gleaning (Porter & Mbezi 2010). Gleaning in the context of SFF is "a fishing method used in shallow coastal, estuarine and freshwaters waters or in habitats exposed during low tide" (https://genderaquafish.org/portfolio/gleaning/). These unpaid supporting activities of fishers' wives subsidise their husbands' fishing activities and, in fisheries characterised by multi-day voyages, women become responsible for nearshore and land-based food production as well as household finances (Davis & Nadel-Klein 1988). Women's harvest is regularly reported as being predominantly for subsistence purposes, whereas men's harvest is marketed, such that women's gathering activities are an important source of animal protein for households (Mills *et al.* 2011a; Matthews *et al.* 2012; Bene *et al.* 2016). Kleiber (2014) reported that in the Central Philippines, women's gleaning contributed 25% of the edible catch retained for household consumption and 45% of the monetary value of catch retained for food. In Indonesia, Bajau women are very skilled in identifying and assembling a wide variety of edible and/or usable produce from different tidal marine ecosystems (Schwerdtner Manez & Pauwelussen 2016). The Bajau are reported to collect over 300 marine species for food, medicine and trading purposes (Stacey *et al.* 2017).

Women's fishing often has a lower risk level than men's fishing, providing a safety net against the seasonality and declining or variable catches of men's fishing, and women often also engage in alternative livelihood activities (e.g. wage labour, agriculture, small shops, and housekeepers) to mediate against the vulnerability of men's fishing activities (Mills *et al.* 2011a; Porter 2012). Women's gleaning from the commons represents a cash saving to the household and may provide poor households with a safety net in times of stress (Shackleton & Pandey 2014; Wunder *et al.* 2014). Further, women contribute vital household capital, being more likely than men to reinvest their income on household expenses and their children's education and health (van den Bold *et al.* 2013; Santos 2015).

Fish as social capital and identity

Fisheries also have a role in supporting relationships and well-being within communities through reciprocal arrangements, access to fisheries and collective action (Bene *et al.* 2016). Every (2016) observed women sharing plates of fish and food stuffs purchased through fisheries-based trading among households connected by kinship and social relations in an Eastern Indonesian fishing community. Fisher's wives have greater economic independence and control in households and community affairs when husbands are absent on multiday voyages, perhaps resulting in prestige and increased self-reliance (Davis & Nadel-Klein 1988).

Finally, in many communities fisheries provide a sense of personal or collective identity to men and women, as well as job satisfaction (Weeratunge *et al.* 2013; Santos 2015; Bene *et al.* 2016). Barclay *et al.* (2016) found that an Australian coastal community's identity, or cultural heritage, as a fishing village was central to perceptions of community well-being. Fishers can have profound pride in their occupational identity and devotion to the fishing way of life, which can account for fisher's resistance to moving out of fisheries (McGoodwin 2001; Daw *et al.* 2012).

3.4 Vulnerabilities of women's small-scale fisheries activities

An increasing literature is exploring the vulnerability of SSF and livelihoods (Ferrol-Schulte *et al.* 2014; Kolding *et al.* 2014; Ferrol-Schulte *et al.* 2015); however little of this research is gendered, nor explores the vulnerability of women's fisheries activities to the speed and consequences of globalisation, climate change and other macro-processes (Porter 2012). Vulnerability refers to "the degree to which a system is susceptible to and is unable to cope with adverse effects" and is comprised of three key dimensions: exposure, sensitivity and adaptive capacity (Adger 2006). The vulnerabilities of SSF can be considered in four areas due to: natural systems; people and livelihoods; lack of participation in governance and management; and external drivers, including climate change (after Mills, *et al.* 2011b).

Vulnerability due to natural systems

Fishing livelihoods are dependent upon the condition of the ecosystem from which fish are harvested, as well as the status and trend of a given target stock. Destructive fishing practices, such as dynamite and cyanide fishing (common in Indonesia to this day), damage near-shore coral reef habitats and affect the productive potential of areas typically gleaned by women. The fishing spaces dominated by women are also affected by pollution flowing from poorly regulated coastal developments and settlements, and the conversion of mangrove forests to large-scale aquaculture ponds (Walters *et al.* 2008).

The degradation of fisheries environments and fisheries resources also mean women and men must venture further away to secure products which can have an impact on other domestic and economic activities such as less time to meet household domestic responsibilities, earn money and engage in other social, cultural or economic activities

There is a lack of knowledge about the vulnerability of men's and women's fisheries livelihoods arising as a result of climate change (Gopal *et al.* 2015). However, fisheries and fishing-dependent communities are often located in places most vulnerable to the risk of extreme events. Coastal and floodplain fisheries can be subject to flooding, cyclones and tsunamis, while inland fisheries can be affected by droughts and floods (Badjeck *et al.* 2013). Aside from the immediate impacts of natural disasters on mortality and morbidity, natural disasters can have a direct impact of livelihoods through destruction of gear, infrastructure and productive assets and an indirect impact through disruption to markets, reduced harvesting capacity, food and employment (Badjeck *et al.* 2013). Indonesia, with a high dependence on fisheries and low capacity to adapt, is considered one of the most vulnerable countries to natural disasters (Badjeck *et al.* 2013). There is also some evidence that women are more vulnerable to natural disasters, due to their lack of mobility as compared to men, and greater susceptibility to post-disaster water-borne illnesses (Matthews *et al.* 2012).

Vulnerability due to gendered social relations

Women's roles within SSF are dynamic and change so as to protect their livelihoods and ensure food and family security (Bennett 2005). Women's participation in fisheries is affected by a lack of access to a range of livelihood assets, such as access to credit, equipment and training, despite these being common components of poverty-alleviation interventions. Stanford *et al.* (2014), identified 83 livelihood interventions in one Indonesian province over a four-year period, at a cost of 10 billion

Rupiah (AU$1 million), yet only 5% of these targeted fisher's wives. Most interventions aimed to increase fish production through the provision of fishing gear and other physical assets (Stanford *et al.* 2014). Many interventions are gender blind, seeking to increase women's productivity, for example by engaging them in aquaculture. However these fail to acknowledge women's multiple roles within households and communities, and simply increase their work burden (Bennett 2005). The diversified nature of women's fishing activities can increase their vulnerability through greater dependence on one resource in the face of shocks and stressors. For example, both men and women participate in the purse seine fishery in Wuring Laut, Flores Nusa Tenggara Timur (NTT), as crew, but women are also engaged as fish traders (Every 2016). This additional activity enables women to barter fish for other food stuffs, contributing to food security, yet in the face of shocks in the purse seine fishery, women would lose a greater volume of income.

The livelihoods of both men and women are affected by poor infrastructure and services, leaving them unable to satisfy basic needs, such as access to clean water and sanitation. Women, especially in remote coastal communities, have limited access to education, and due to low levels of literacy are often excluded from participation in extension programmes due to cultural norms (Harper *et al.* 2013). This hinders their ability to learn improved techniques in post-harvest processing or methods for small-scale aquaculture.

Women are also reported to experience poor working conditions in processing factories. It has been reported that women, primarily in Africa, are exposed to HIV/AIDS in transactional relationships through which they secure fish from fishermen (Bene & Merten 2008; Matthews *et al.* 2012).

Vulnerability due to lack of participation in governance and management

Traditional sea ownership arrangements, as well as socio-cultural norms about women's roles within communities, can leave women with limited access to, and control over fisheries resources and their management than men (Leisher *et al.* 2016). This has perpetuated the invisibility and marginalisation of their roles within SSF.

Women are generally excluded from SSF governance processes (Kleiber *et al.* 2014; Baker-Medard 2016). This is despite increased efforts to improve management of marine resources through ecosystem-based management, the creation of marine protected areas, and community-based or co-management. Instead, new management activities are often focused on managing fish stocks which can exclude women from traditional fishing areas. For example the issuing of licences for aquaculture development in mangrove forests, or the creation of no-take zones oven areas important for women's gleaning activities (Baker-Medard 2016).

Women are often excluded from attending or contributing to public discussions; if attending they may be relegated to menial tasks (e.g. catering), lack the confidence to speak up, or feel that their views will be ignored anyway; while the heterogeneity of women within a community may mean that the views of a woman with greater social standing are not reflective of another's needs (Agarwal 2001, 2009). A recent review of the impact of gender composition of forest and fisheries management groups on governance and conservation highlighted the importance of empowering women through increased participation in local resource management decision-making, which lead to better resource governance and conservation. Women's organising, and collaborative abilities are suggested to make them beneficial partners in fisheries development and management initiatives, yet socio-cultural norms often prevent their effective participation in community decision-making processes (Harper *et al.* 2013; Leisher *et al.* 2016).

Women's ecological knowledge of fisheries is an untapped resource in data poor fisheries management systems (Harper *et al.* 2013; Kleiber *et al.* 2014). Given men's and women's different roles in fisheries, they are exposed to different environments, skills and experiences, and it is therefore

likely that there are gender-specific domains of knowledge (Schwerdtner Manez & Pauwelussen 2016). The frequency and regularity of women's fishing, estimated from 3 hours per day in a rural coastal context in Indonesia (Fitriana & Stacey 2012), to 4 hours per week in the Philippines (Kleiber 2014), is suggested to offer meaningful insight into the condition of nearshore resources and changes over time (Harper *et al.* 2013). With most fisheries management programmes targeted towards sustainable management of male-dominated commercial fisheries, women's knowledge of near-shore coral reef, seagrass and mangrove habitats and the species targeted therein, and their use in traditional medicine, is not documented nor included in spatial management plans. This has implications for food security, particularly with women's harvesting predominantly for subsistence consumption, and as well as the quality of life and well-being of households. Further, because of their roles as processes and traders women have unique information about changes in target species, sizes and quantity, as well as price fluctuations (Schwerdtner Manez & Pauwelussen 2016). This knowledge is generally not collected in surveys that interview fishermen or household heads.

Overall, poor knowledge of women's participation in fisheries, including quantification of catch and value-adding, together with poor understanding of gendered access to and use of fisheries resources, can result in underestimation of the total level of human pressure on marine ecosystems and species (Harper *et al.* 2013; Kleiber *et al.* 2014). Lack of women's decision-making capacity in SSF can result in fisheries management and policy decisions having unintentional but significant negative consequences for women (Bennett 2005; FAO 2007; Harper *et al.* 2013; Williams 2013, 2015a). Improving equity in the allocation of resources and decision-making around those resources, could potentially better address the needs of men and women (Leisher *et al.* 2016).

Vulnerability due to external drivers, including climate change

Globalisation of fisheries markets has resulted in competition between small-scale and large-scale fishing operations, and Williams (2015b) notes the concentration of economic power in fewer larger companies. These changing patterns in international trade can affect women's roles in SSF; for example, Harper *et al.* (2013) report the exclusion of women from traditional processing activities in West Africa. This was due to increased demand for fresh fish in Europe, resulting in fish transferred directly to boats destined for Europe or to factories that can meet higher health and safety standards. Similarly, increased demand and price for certain species has seen men enter formerly women-only fisheries. For example, women were displaced from a Tanzanian subsistence octopus fishery as men entered the fishery in response to increased international demand, used equipment that women were forbidden from using and ignored traditional seasonal closures that had preserved stock (Matthews *et al.* 2012). Government-lead spatial change in elements of value chains can also increase women's vulnerability; for example, restrictions on access to markets can isolate women from fish resources and increase their transaction costs (Every 2016). Population pressures, through growth, migration and resettlement programmes, can also create social conflict and affect women's livelihoods by increasing competition. Out-migration is noted as drawing women away from traditional roles, e.g. working as domestic maids in the Middle East (Hoque 2015).

There is a lack of knowledge about the vulnerability of men's and women's fisheries livelihoods as a result of climate change (Gopal *et al.* 2015), however fisheries and fishing-dependent communities are often located in places vulnerable to the risk of extreme events. Coastal and floodplain fisheries can be subject to flooding, cyclones and tsunamis, while inland fisheries can be affected by droughts and floods (Badjeck *et al.* 2013). Aside from the immediate impacts of natural disasters on mortality and morbidity, natural disasters can have a direct impact on livelihoods. This may be through the destruction of gear, infrastructure and productive assets. Indirect impacts may include, the disruption to markets, reduced harvesting capacity, and access to markets, food and employment (Badjeck *et al.* 2013). Indonesia, with a high dependence on fisheries and low capacity to adapt, is considered one of the most vulnerable countries to natural disasters (Badjeck *et al.* 2013). There is also evidence that

women are more vulnerable to natural disasters, due to their lack of mobility as compared to men, and greater susceptibility to post-disaster water-borne illnesses (Matthews *et al.* 2012).

4. Women, fisheries livelihood development and policy opportunities

Development interventions/programmes in SSF have predominantly been driven by economic imperatives (i.e. seeking to increase export earnings) and, more recently, "crisis" conservation narratives which underlie fortress-type marine protected area programmes (Berdej *et al.* 2015; Steenbergen et al 2017). These imperatives have, especially in Indonesia, generated interventions that focus on increasing men's harvest in capture fisheries through the provision of equipment to increase and preserve the value of harvested resources (i.e. boats, ice) (Stanford *et al.* 2014). It is only more recently that programs have given some attention to increasing women's ability to participate in markets (e.g. preserving/processing fish for sale in local markets) or providing equipment to support improved harvest (e.g. mangrove crab fattening cages) (Quist 2016).

These programmes typically reflect a "women in development" approach, seeking to increase women's perceived lack of productivity without broader consideration of the socio-cultural norms, and power relations that restrict women's access to resources and inclusion in governance processes (Razavi & Miller 1995). In some cases, for example, women have gained access to services only through male relatives (Quist 2016). These type of programmes have continued, despite efforts to promote gender mainstreaming in SSF and livelihoods programmes (FAO 2007); and it has been argued that a consequent lack of understanding of gender issues contributes to the failure in livelihood development policies and programs (Arenas & Lentisco 2011).

Recent papers explore issues of gender and innovation in small-scale fisheries, specifically with reference to adoption of alternative and enhanced livelihood opportunities. Local and gendered social norms and relations, particularly those within marriage, were found to influence the capacity of men and women to innovate (Cohen *et al.* 2016; Locke *et al.* 2016). In a multi-country study, Locke *et al.* (2016) identified gendered differences in reasons for innovation, with men focused on increasing household income and women oriented to moving out of poverty and ensuring their families had sufficient food to eat (Locke *et al.* 2016). These differences necessitate awareness of local context and careful gender analysis in development of livelihood programmes, as certain groups may be unable to bear the costs and risks of innovation, while increased livelihood flexibility can also increase women's work burdens (Cohen *et al.* 2016).

The challenges of achieving gender mainstreaming in development programmes have been acknowledged (e.g. UN Women 2013), and there has been a renewed call for gender-transformative approaches, which are "based on a more complex and conceptually robust understanding of gender as a social construct, embedded in how societies define women's and men's roles and relations and the distribution of resources" (Cole *et al.* 2014 p.7). Gender transformative approaches are currently being implemented in several small-scale fisheries contexts (Cole *et al.* 2014; Rajaratnam *et al.* 2016).

4.1 International policy framework for gender and small-scale fisheries

Gender was highlighted as a special issue in *The State of the World Fisheries and Aquaculture 2012* (FAO 2012). International agencies such as the Food and Agriculture Organisation of the United Nations ("FAO") and High-Level Panel of Experts ("HLPE") have identified significant research gaps in the extent of women's participation in all aspects of the fisheries and aquaculture sector and its supply chains globally. They identify the need for policies on fisheries to take better account of gender and encourage gender equality (HLPE 2014). The international literature has also identified significant gaps in understanding women's roles in fisheries and the implications that has for poverty alleviation, development policy and management.

Since then FAO have released its *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries* (2015b) (the "SSF Guidelines") as a complement to the 1995 FAO *Code of Conduct for Responsible Fisheries*. The SSF Guidelines explicitly recognise that women are significant participants in the sector and include gender equality and equity as guiding principles (FAO 2015b).[31]

At the 6th Global Symposium on Gender in Aquaculture and Fisheries ("GAF6")[32] held in Bangkok in 2016 presentations by academics and practitioners highlighted the need for effective implementation of the SSF Guidelines. However, this is challenged by the lack of official statistics and data on women's participation and work in the SSF sector globally and for Indonesia. This invisibility impacts on how fishing is defined as an economic activity leading to an emphasis on the production aspects of the value chain and "the act of catching fish" (Biswas 2016 p.1), while the other activities women participate in along the value chain such as pre-production or trading are often ignored. This in turn demonstrates that exclusion of the women and their invisibility in fishing is primarily a policy issue. However even if women are included in mainstream policy, they remain generally marginalised at local governance level due to capacity deficits such as lack of funds, cultural taboos and societal prejudices (Schwerdtner Manez & Pauwelussen 2016; Williams *et al.* 2016), and even where gender policies to support equity exist they are often not implemented.

The SSF Guidelines provide an initial attempt to address these issues, "suggesting entry points for women in the fisheries to exercise, and demand the recognition of their rights, in all aspects of the fish value chain" (Biswas 2016 p.1). It is recommended that "the next steps would be to take forward the campaign to include provisions of the Guidelines as part of policies for small-scale fisheries, particularly for the recognition of women and their rights within the sector" (Williams *et al.* 2016 p.10).

Some commentators have argued that while the SSF Guidelines go some way to addressing gender inequity and inequality, gender is not a cross cutting issue in the Guidelines (Frangoudes & Kleiber 2016; Williams 2016b). For a full assessment of gender in relation to the SSF Guidelines see Quist (2016).

The final report of GAF6, *Engendering Security in Fisheries and Aquaculture*, concludes that while the SSF Guidelines have given prominence to national level action for gender equality in fisheries, more needs to be done to put this into practice to engage women in decision making regarding the governance and management of fisheries they participate it, counting women in statistics and allocating resources to support gender equity and human resource expertise (Williams 2016b). Further the report argues "the ultimate conclusion of GAF6, however, is that social and fish sector norms will have to be transformed to engender security [in relation to policies, food, livelihoods], as they currently may stand in the way of gender equality and equity. Women will need new political organisation to galvanize the transformation" (Williams 2016b).

4.2 Indonesian policy framework for gender and small-scale fisheries

Indonesia has incorporated the SSF Guidelines into its draft *National Plan of Action on Small-Scale Fisheries* ("NPOA SSF") and has also incorporated it into the *Long Term National Development Plan* ("RPJMN 2015-2019"), which states "the government should provide credit facilities for small scale

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[31] *The ICSF with support from FAO is developing a guideline to promote the SSF Guidelines for gender-equitable small-scale fisheries governance and development due out in mid-2017. The Guide will aim to enable stakeholders to mainstream the principles of gender equality in all aspects of fisheries development and governance and provide a practical tool for promoting gender equality and women empowerment using human rights based approach in the fisheries.*

[32] *See the full report on GAF6 - Engendering Security in Fisheries and Aquaculture -https://genderaquafish.org/events/2016-gaf6-august-bangkok-thailand/gaf6-program-abstracts-and-ppts/. GAF6 was the 8th women/gender in fisheries/aquaculture symposium in the series hosted by the Asian Fisheries Society over the past 18 years.*

fishers, and subsidies and insurance" (Nurhidayah & Alam 2016 p.18). The draft NPOA, which will be Indonesia's contribution to the development of a framework for a Regional Plan of Action for the Implementation of the SSF Guidelines, includes four key actions: translation of the SSF Guidelines into Bahasa Indonesia; conducting workshops for developing national guidelines; developing small-scale fisheries NPOA; and conducting regional consultation workshop on small-scale fisheries (Fauzi 2015).

Indonesia's House of Representatives has enacted legislation on small scale fisheries, small scale aquaculture farmers and salt farmers. The law for the Protection and Empowerment of Fishermen, Fish Raisers and Salt Farmers (No.7/2016, April 14, 2016) aims to improve the welfare of fishermen and salt farmers by creating a strategic framework of protection and empowerment outlined at the national, provincial and regency/municipal levels. Fishermen were defined as anybody who earns a livelihood by catching fish (Article 1.3), and were further quantified by the nature and scale of their activity protection is to be achieved through the provision of equipment, infrastructure, subsidies and insurance, while empowerment is to be achieved through the provision of education and training, improved access to information and the building of local institutions. The law appears to recognise the important familial nature of fishing activities, explicitly applying provisions to the families of fishermen and fish raisers engaged in processing and marketing, and recognising the role of women in such households (Articles 5(2), 45).

The Indonesian government, led by Minister Susi Pudjiastuti, Minister of Marine Affairs and Fisheries, is pursuing a new marine and fisheries policy based around three dimensions: sovereignty, sustainability and prosperity (Fauzi 2015). One initiative is the SEKAYA MARITIM program which targets 1000 villages during 2015-2019, and aims to implement activities such as fishers cards, protection and training, diversification business development, land certification, access to finance (through microfinance institutions), SMART information systems (real-time data), partnership development, and appreciation through awards (Fauzi 2015 p.11).

In a recent paper, Indonesian legal academics have compared Indonesia's national legal instruments with the SSF Guidelines and concluded that Indonesia's national regulations were in accordance with international regulations for small-scale fishing (Ariadno & Amelina 2016). They also made some general recommendations such as improved protection of fisherwomen, the diversification of fishing effort and the need for more policy-oriented research (Ariadno & Amelina 2016).

It is widely acknowledged that many national policy instruments such as laws, regulations and codes of conduct regarding fisheries are 'gender blind' which contributes to the invisibility of women in fisheries, and subsequent marginalisation and increased livelihood vulnerabilities, particularly in Indonesia (Quist 2016). Of the countries who participated in the Regional Fisheries Livelihood Program, which included Indonesia, only Cambodia has a gender policy specifically for fisheries (Lentisco and Alonso 2012).

In summary, the exclusion of women from SSF census and analysis results in underestimations of their participation in all aspects of fisheries and this has flow on effects for development and policy (Koralagama *et al.* 2017). Although progress is being made to develop gender-sensitive policies and programs relating to fisheries in some countries, more needs to be done to promote gender equity for livelihood sustainability (Harper *et al.* 2017). The 2016 IIFET Conference Gender Special Session (which had a focus on trade and markets) highlighted the need for sex disaggregated data and indicators in all aspects of fisheries research on value chains (Williams 2016a).

5. Gender - fisheries research, methods and recommendations

Gender in Aquaculture and Fisheries Network (GAF) hosted by the Asian Fisheries Society[33] is the most valuable promoter and source of gender-related fisheries research. These GAF network has been championed by Dr Meryl Williams and other volunteers from around the world since 1990 to support collaborations, research and development to achieve gender equity in fisheries and aquaculture. Various conferences and symposia have been held to promote gender-related fisheries research and collaborations among scientists, academics, technicians, fisheries officers, and Government and NGO workers to facilitate the research activity. Most importantly to they promote the sharing of information and publication of results. Recently a formal section, 'Gender in Aquaculture and Fisheries' has been established under the Asian Fisheries' Society.[34] Various resources, publications and presentations and summaries on the state of gender and fisheries are available.

An analysis of gender relations and issues in fisheries/NRM involves consideration of issues such as:

- Assessing the roles and patterns of men and women in resource use, livelihoods, decision-making and work within the household;
- Involvement in income generation;
- The nature and degree of access to, and control over natural resources and their products;
- Control over the benefits of their work (along value chain);
- Asset ownership and access to resources;
- How resource management affects men and women differently;
- Vulnerability (resource degradation affects men & women differently); and
- Taking these perspectives into account when designing interventions.

Various theoretical and practical approaches, methods and tools, as well as recommendations for 'gender-sensitive' indicators, are available to support gender studies and analysis in fisheries and aquaculture (e.g. World Bank *et al.* 2009 Module 13; Arenas & Lentisco 2011; IFPRI 2014; Kleiber *et al.* 2014; Porter 2014; Hillenbrand *et al.* 2015).[35] These include sex disaggregated household surveys, value chain analysis, gender analysis and livelihood assessments.[36] Many of these manuals provide further links to resources.

March *et al.* (1999) provide a review of six key gender analysis frameworks: the Harvard Analytical Framework, the Moser Gender Framework, a Gender Analysis Matrix, Capacities and Vulnerabilities Analysis Framework, Women's Empowerment (Longwe) Framework, and the Social Relations Approach. These frameworks differ in their scope and emphasis; for example, the Harvard Analytical Framework focuses of documentation of the social roles of men and women, whereas the Social Relations Approach goes further providing an in depth analysis of the power and social relations and

[33] http://genderaquafish.org/

[34] http://genderaquafish.org/2017/02/03/join-gafs/

[35] *At GAF5 in 2014, held in India, recommendations included developing train the trainer courses for government fisheries staff for improving gender considerations in fisheries (http://genderaquafish.org/gaf5-2014-lucknow-india/).*

[36] *See Appendix 3 for links to some CGIAR and other development organisation resources and manuals.*

institutions that produce these social roles (March *et al.* 1999). The literature unequivocally calls for a shift away from gender roles analysis to the more nuanced insights generated by gender relations analysis (e.g. Williams 2008; Hillenbrand *et al.* 2014; Williams 2016a).

'Gender blind' studies have contributed to data gaps on women's roles in fisheries (Quist, Kleiber?); clearly a better approach to gender is needed. A number of approaches now argue that greater gender sensitivity in fisheries research offers hope for improved management and better development outcomes (Koralagama *et al.* 2017), that would otherwise not be possible based on quantitative fisheries data analyses alone (see also Prescott *et al.* 2017).

- Porter (2014) identifies feminist methodology and approaches that could be useful in gender fisheries and aquaculture research. '
- Lentisco and Alonso (2012) reviewed frameworks and approaches for mainstreaming gender into fisheries within the context of the RFLP and developed a field manual (Arenas & Lentisco 2011).
- Kawarazuka *et al.* (2016) have recently considered gender analysis and socio-ecological systems research.
- Barclay *et al.* (2016) highlighted recent emerging approaches on mixing qualitative social research and frameworks (i.e. well-being, interactive governance, gender analysis) with quantitatively-oriented biological approaches to fisheries management.

A project led by Sarah Harper at the Fisheries Economics Research Unit, Institute for the Oceans and Fisheries, University of British Colombia, is building a global sex-disaggregated fisheries participation database.[37] A preliminary outcome is presented in a new paper on the results of 5 case studies looking at the status of women in the fishing industry, including their inclusion in fisheries policies (Harper *et al.* 2017).

A review of the available resources appears to show that there are many different resources available through academic, and research and development organisations and studies. No doubt there is also much available from the development sector on gender policy approaches and field guides relating more broadly to gender mainstreaming in different types of development projects and interventions. However aside from Arenas and Lentisco (2011) which provides a practical information on mainstreaming gender into fisheries and rural development projects there is a no dedicated complete and detailed manual or guideline available which focuses specifically on SSF and aquaculture in developing tropical countries with a strong gendered analysis approach to tease out key theoretical, equity and fisheries management and governance policy issues that may be considered in gendered assessment of fisheries and livelihoods. It is important to recognise that many different academic disciplines are engaged in SSF research and management - from anthropology, sociology, geography, biological sciences and feminist theory (Pers. Comm, M. Williams 23/02/2017) and developing a guideline that manages to fit in all approaches and disciplines within a fisheries and livelihood context (either at a practical or theoretical level) may be challenging.

This presents an opportunity to develop bilingual training and research materials specifically relevant to Indonesia's SSF sector to support gendered research, policy and livelihood development in Indonesia. Such needs have also been identified as strategic priorities in the recent *ACIAR – Australia Indonesia Strategic Plan 2015-2025* for capacity and institutional building to support evidence-based fisheries research, management and policy development in social and economic areas, including

[37] http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/60160/Sumaila189ppt.pdf?sequence=1.

gender research and engagement with women in management and policy development.[38] These tools could then be tested in a selection of case studies for a representative sample of SSF in Indonesia with government, University and NGOs agencies involved in fisheries management and livelihood and policy development.

[38] *P4KSI and ACIAR (Centre for Fisheries Research and Development, Indonesia, and Australian Centre for International Agricultural Research) 2015. Strategic plan for ACIAR engagement in capture fisheries research and capacity development in Indonesia, 2015–25. ACIAR Technical Report No. 88. ACIAR: Canberra. 28 pp.*

PART B: Approaches to small-scale fisheries livelihood diversification, enhancement, and alternatives

1. Introduction

Sustaining current small-scale fisheries based livelihoods and developing new livelihood activities is an increasing priority for Indonesia. This is particularly important in the context of unsustainable fishing practices, vulnerability and poverty alleviation. Unregulated and unmanaged activity and large scale foreign fishing have resulted in overexploitation of valuable species, and the decline in stocks of some species. Pollution and environmental trends such as climate change and natural disasters, as well as increasing restrictions on access to marine resources due to management and conservation initiatives (e.g. MPAs), have seriously affect the potential for coastal people to realise their livelihood goals. Various approaches and initiatives have been implemented in Indonesian coastal communities by government, international development agencies and NGOs, but documentation is poor, and evidence of successes limited. This is often due to lack of understanding of the complexity of the conditions under which livelihoods are constructed, and incorrect assumptions underlying the needs and aspirations of communities (Steenbergen *et al* 2017). This section reviews the sustainable livelihoods approach and sustainable livelihoods framework, a discussion on livelihood strategies of coastal communities to show that coastal livelihoods may be based on diverse natural resource and non-natural resource based activities. The next section discusses approaches to livelihood diversification and enhancements and interventions and what works and what lessons have been learned.

2. Sustainable Livelihoods Approach and Framework

The idea of 'sustainable livelihoods' (SL) first emerged in the 1970s. The approach was the product of a shift in thinking from income-based, top-down approaches to poverty alleviation to a focus on increasing access to resources, reducing vulnerability and enhancing empowerment from the perspective of the poor (Bebbington 1999).

The Sustainable Livelihoods Approach (SLA) evolved in the 1980s. Conceptualised by Chambers (1984) from research and practice in the international rural development sectors in Asia and Africa—it recognised that for many households, particularly the poorer ones, agricultural systems were not their only economic basis. It was further developed by Chambers and Conway (1991) and Scoones (1998), and by the end of the 1990s, sustainable livelihoods had become a concept employed by international development organisations. The Sustainable Livelihoods Approach ("SLA") developed and promoted by practitioners from the UK in the 1990s through a Sustainable Livelihoods Framework (SLF) incorporated natural resource management and rural development perspectives, with best practice participatory approaches to inform interventions and improve rural livelihoods. The approach recognised the close dependency of rural people's livelihoods on natural resources and concerns about sustainability of natural resources in the long term (including environmental sustainability).[39]

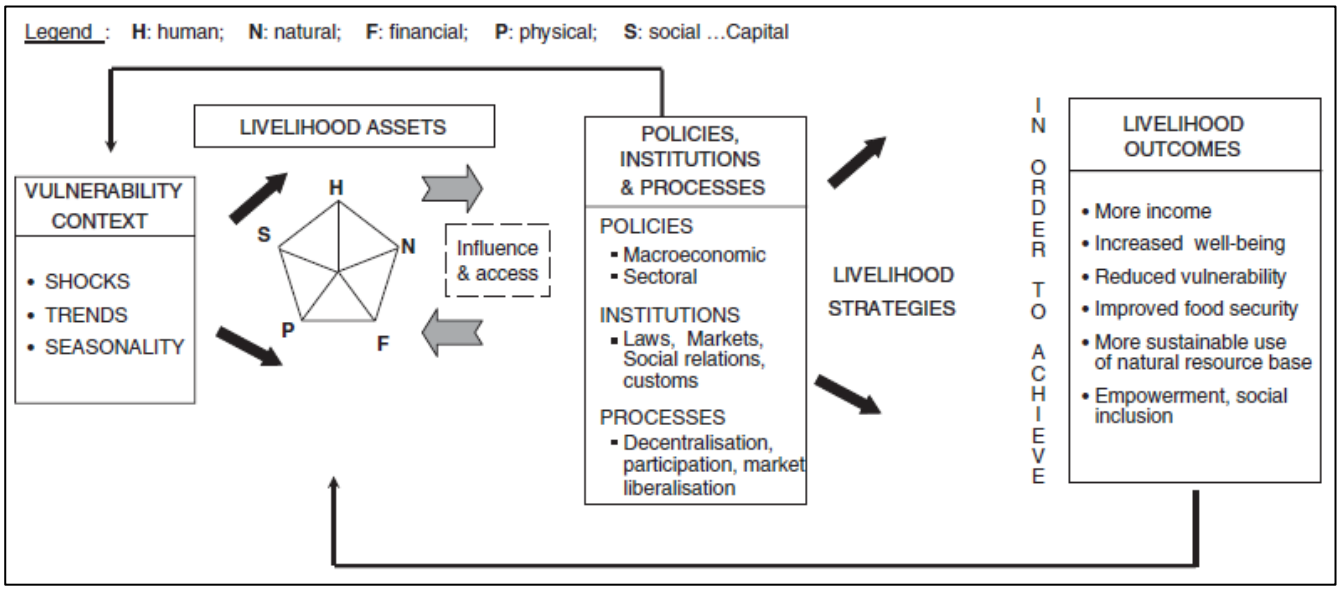
The Sustainable Livelihoods Framework (SLF) provides a holistic checklist to analyse how people make a living (Farrington *et al.* 1999), providing an integrated view of the processes by which people achieve (or fail to achieve) sustainable livelihoods (Figure 11.3.1). The SLF has been applied widely in both a research (e.g. data collection and analysis) and a development context, to inform on interventions and improve rural livelihoods. (DFID 1999). The SLA, which uses a SLF, requires the identification and

[39] *See Bennett (2010) for a short summary of the evolution of the SLA.*

investigation of a wide range of relations, institutions and assets to understand both opportunities and constraints that people face to address fundamental questions such as:

i) How are household livelihood strategies constructed? (i.e. natural resource and non-natural resource based);
ii) What policies, institutions and processes constrain and enable livelihood strategies?
iii) What are the opportunities for livelihood improvement and how can these be implemented?

Figure 11.3.1: The Sustainable Livelihoods Framework-



Source: Allison and Horemans (2006, p. 759), after DFID (1999).

The SLF shown in Figure 1 introduced the concept of 'livelihood assets', combining human, physical, natural, social and financial capitals to understand how and why people choose or combine livelihood pathways and strategies leading to livelihood outcomes. The approach focuses on the capabilities and strengths of individuals, families and households rather than their needs or desires. Central to the framework is analysis of the 'Policies, Institutions and Processes', the formal and informal institutional and organisational factors that can influence livelihood outcomes and the 'vulnerability context' (shocks and trends). The approach recognises that poverty and livelihoods are multidimensional, complex and unique–that livelihoods are more than economic (income-based), and that a sectoral or one-dimensional approach to an intervention can be counterproductive. the SLF brings together the principal components thought to comply with the definitions of 'livelihood', as well as demonstrating the interactions between components (Allison & Ellis 2001 p.379). Some practitioners and scholars have also argued that the SLF would benefit from inclusion of *cultural* (Tao *et al.* 2010) and *political assets* (e.g. Cahn 2006; Nunan 2015), that there should be more attention to power relations and conflict over assets among people (Davies *et al.* 2008). Others have noted the role of markets is not well considered (Allison & Horemans 2006).

The key concept of the framework is that household (the fundamental social and economic unit) livelihood activities and strategies (e.g. farming, fishing, off-farm employment, remittances etc.) are based on the use of assets (or capital) (broadly categorised as human, financial, physical, social and natural). Households depend on a range of productive assets which they may either own privately, or access as common property or even use as open access resources Livelihood strategies are composed

of activities that generate the means of household survival through a livelihood portfolio (Ellis 2000). Different strategies depend on the different mix of assets (Scoones 1998).

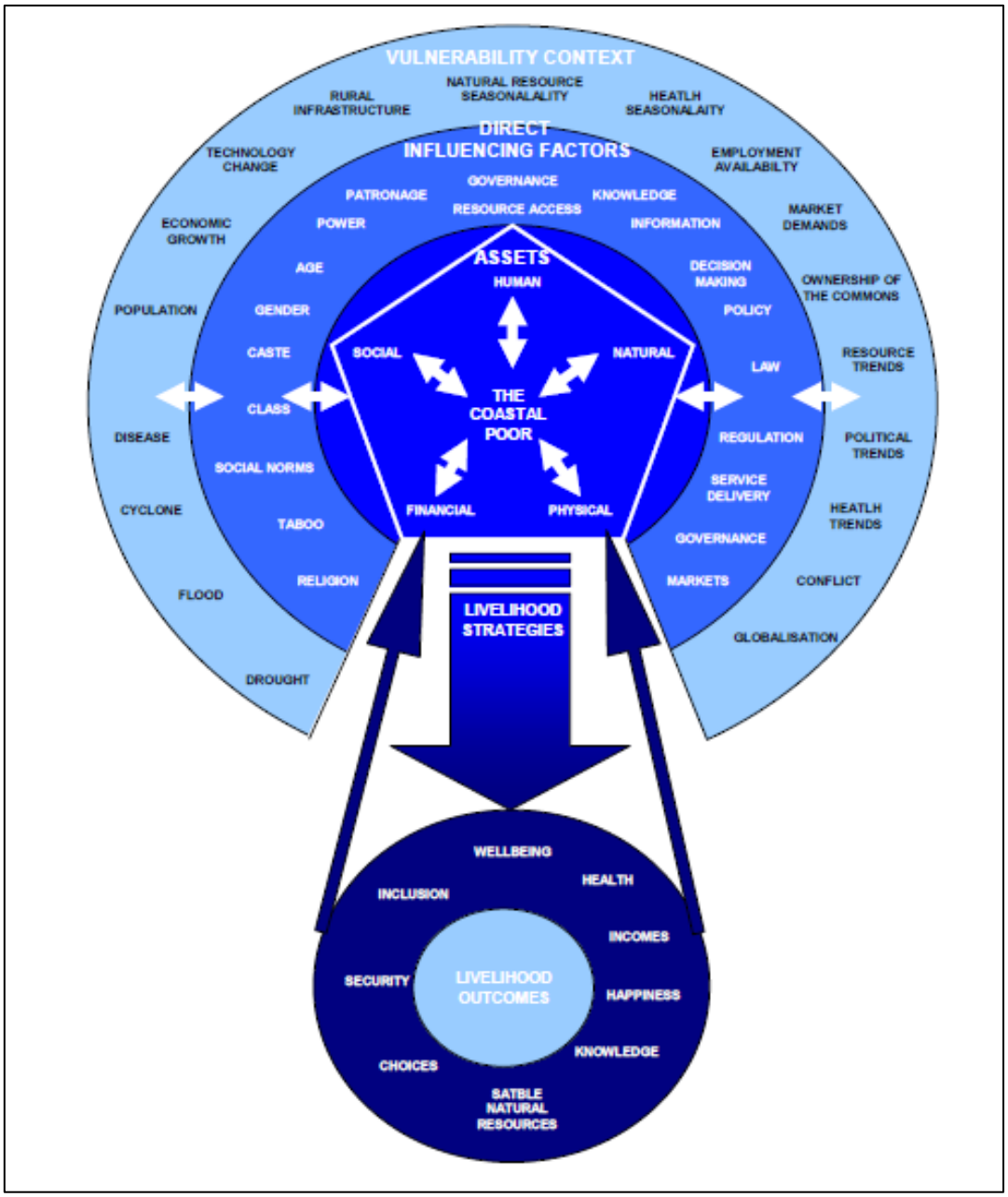
Numerous versions of the standardised framework exist (e.g. Allison & Springate-Baginski 2009; IMM Ltd 2010), adapted for/by different applications in the field (see Scoones 2009). It is intended that each version suit particular contexts, and provides an analytical structure for unpacking livelihood complexity and influences, and identifying areas where interventions can be made (Farrington *et al.* 1999). Figure is an example of a framework that has been adapted for coastal livelihoods (Ireland 2004). The shape of the pentagon can be used to show schematically the variation in people's access to assets. The idea is that the centre point of the pentagon, where the lines meet, represents zero access to assets while the outer perimeter represents maximum access to assets. On this basis different shaped pentagons can be drawn for different communities or social groups within communities (DFID 1999). A large range of direct influencing factors influence access assets and livelihood strategies.

Households exist within an uncertain environment, and livelihood sustainability is affected by the *vulnerability context* (or 'risk exposure' as it is referred to in some literature). This reflects the ever-present risk of seasonal fluctuations, other shocks (e.g. tsunami), and underlying trends in livelihood conditions that are beyond the household's control. Trends might include seasonal fluctuations, decreasing catch rates, increasing prices of fish or produce, and rising costs of household staples like rice or medicine. Shocks include storm damage to shore facilities, fuel price increases, and currency devaluations. Illness or death of a family member or theft or losses of equipment are also common shocks. Livelihoods are also modified by policies, institutions and processes (sometimes represented as policies, institutions and processes in other versions of the SLF) which can enable or hinder how people mobilize and combine their assets to pursue livelihood outcomes.

Livelihood outcomes should not only be measured in monetary terms (e.g. income). Livelihood outcomes include multiple indicators such as income, food security, wellbeing and the sustainable use of natural resources. They can also include a strengthened asset base, reduced vulnerability and improvements in non-material aspects of well-being (DFID 1999). Outcomes will depend on context and vary between individuals, households and communities. There will also be trade-offs between outcomes.

Improved understanding of how people are able to either maintain, or struggle to maintain their livelihoods can identify areas where policy interventions can provide coping or adaptive strategies (Allison & Springate-Baginski 2009).

Figure 11.3.2: Sustainable Coastal Livelihoods Framework.



Source: Ireland (2004), citing IMM Ltd (2003).

3. Livelihood strategies of coastal communities

Households employ their productive assets or capitals in combination with their labour allocation in livelihood strategies in order to generate income and well-being (Ellis 2000). The livelihoods strategies of coastal communities are often complex, dynamic and adaptive. Fishing might be a part time or full-time activity, as part of a diversified livelihood strategy (including both fishing and/or non-fishing activities); or as a seasonal safety net or 'fall-back', when other strategies (i.e. farming) are unavailable or unproductive. The literature notes that, in general, most rural households and coastal communities have multiple livelihood strategies. Fishing can be an inconsistent and unpredictable source of income therefore many communities that rely on fishing as their primary source of income also participate in additional livelihoods activities (van Oostenbrugge *et al.* 2004).

Fishing communities or fishery-dependent households and populations have a strong cultural identity and social norms (Stacey *et al.* 2017) where it is recognized that fishing is a 'way of living' (McGoodwin 2001; Bene *et al.* 2015). Different social (and ethnic) groups who adopt different livelihood strategies to fishing, tend to have varied gender roles and levels of dependency on fishing activities.

For coastal communities, livelihood strategies can include activities such as agricultural (e.g. fishing/farming, livestock rearing; off-farm income earning activities such as employment) or migration (temporarily or semi-permanently). Households can also earn supplementary income through remittances outside of fishing (Allison & Ellis 2001). Individuals within the household would specialise in different occupations (Ellis 2000), and each of these would use a different mix of assets (Scoones 1998). Fishing communities or fishery-dependent households and populations have a strong cultural identity and social norms (Stacey *et al.* 2017) where it is recognized that fishing is a 'way of living' (McGoodwin 2001; Bene *et al.* 2015). Social (and ethnic) groups who adopt different livelihood strategies to fishing,

Ireland (2004) identified over 100 different coastal livelihood activities demonstrating the diversity of livelihoods in coastal communities. Some of these are traditional or more recently introduced natural resource based activities (such as agriculture and fishing/gleaning/aquaculture and non-timber forest product/timber harvesting, tourism), while others are non-natural resource based ones (e.g. off farm/non-fishing employment, labouring, and building, transport, petty trading, weaving, arts and craft, ice seller, food hawkers).

It is recognised that livelihood diversification (a portfolio of activities and assets) is important for rural households in order to achieve increased income, livelihood security and improve their standards of living, and establish a strategy for spreading risk and reducing vulnerability (Ellis 2000; Brugere *et al.* 2008).

Livelihood diversification is dynamic. Households and their members (men and women) diversify strategies over time for a range of reasons: in response to changing pressures and opportunities; to reduce vulnerability by anticipating or addressing risks; or as a coping mechanism due to shocks where households can adopt coping strategies that may result in an entirely different livelihood mix (Ellis 2000). Engaging in a range of activities reduces risks, compared to permanently abandoning a particular livelihood activity and substituting it for a newly introduced activity which would be considered risky (Wright *et al.* 2015). Livelihood diversification is initiated independently or with external assistance for several reasons: 1) Coping – short term response (ex-post) to decreased income and food supply; 2) Adaptation – long term and gradual response (ex-ante) to buffer against potential shocks, seasonality and changes, as a permanent strategy; and 3) other reasons (e.g. cultural factors) where fishers may be restricted by caste and unable to diversify activities (Brugere *et al.* 2008).

Households also respond to changes in livelihood strategies in times of need. For example labour allocation to fishing may increase to adjust for income variation and modification of consumption patterns (Allison & Ellis 2001). Death or illness of a household member can also lead to forced livelihood diversification.

Examples of livelihood diversification was illustrated in a recent study among coastal communities in Brazil (Hanazaki *et al.* 2013) and West Sumatra (Yuerlita *et al.* 2013). In Brazil, although fishing was the main activity for coastal communities, fishing was rarely the unique activity of the household, only 1% of 182 households relied exclusively on fishing – on average households had four activities. In West Sumatra, only 12% of households surveyed identified fishing as their only source of income with most households engaged in a range of other fishing or non-fishing related strategies such as farming or off-farm activities. These findings are likely to be similar in coastal situations in Indonesia (e.g. see Stanford *et al.* 2013), they are also likely to demonstrate a greater diversity of fishing related strategies of men and women and interdependence of livelihood activities and gender differentiation.

It is difficult to generalise for Indonesia given the range of fishing activities and dependence. Fishing dependence could be considered across a continuum – from landless maritime populations with high dependence on fishing as the main livelihood strategy, to coastal farming orientated communities with land tenure and who may engage in multiple agricultural and fishing activities as part of a household portfolio. Even in cases where households depend exclusively on fishing, there may be a variation in type of fishing activity on a seasonal basis. An example of this would be among the Bajau, Butonese and Bugis communities, who switch between different target species, gear types and fishing areas (Allison & Ellis 2001). An important point to be made is that small scale fishers or coastal communities are often dependant on an entire ecosystem rather than a single species to maintain and accommodate flexibility in livelihood diversity (Stanford *et al.* 2013 citing Bailey and Pomeroy 1996).

In contrast, Pantar Island households engaged in multiple income generating activities depending on their situation (Fitriana 2014)–some villages were more engaged in fishing and different types of fishing or trading fish all year round; some were able to farm if they had access to land in the wet season; and other villagers migrated during low fishing seasons regionally within Indonesia or internationally to Malaysia. The migration of communities to other territories and fishing grounds at particular times of year is facilitated through kinship or economic relationships (Allison & Ellis 2001; Stacey 2007).

In some places, seasonal diversification is an important component of livelihood portfolios and men and women can have higher income earning activities at specific times during the year (Lynch 2014). Gender has a particular influence on how individuals contribute to household livelihoods (IMM Ltd *et al.* 2005).

4. Approaches to livelihood diversification, enhancement and alternatives

There are a range of views on what sustainable livelihood enhancement, diversification, and supplementary or alternative livelihood programs entail with reference to coastal communities and marine and fisheries conservation and management. Their implementation is often by external agents to relieve pressure on coastal or marine resources or as a means of assisting the rural poor out of poverty (Townsley 1998).

In the case of coastal and SSF communities, enhanced or alternative livelihood programs are generally aimed at either:

- Promoting substitutes to reduce participation in illegal behaviour or environmentally destructive fishing practices;
- Reducing fishing pressure on marine resources;
- Assisting in the conservation of marine habitats and species; or
- To reduce poverty.

Livelihood experts (e.g. Townsley 1998) classify livelihood programs as initiatives promoting:

- Livelihood enhancement (improving current livelihood strategies to make them more sustainable);
- Livelihood diversification (adding new components to current livelihood strategies); or
- Livelihood change (adopting new strategies).

More recently, practitioners (IMM Ltd 2008) identified factors that can identify and facilitate opportunities for livelihood enhancement, diversification, and change. These are separated into two streams:

1. Opportunities for livelihood enhancement and diversification:
   i. Opportunities for enhancing existing livelihood strategies;
   ii. Opportunities for new or improved employment;
   iii. Opportunities for enterprise development.

2. Opportunities for promoting the factors that help livelihood change (which also address factors that inhibit livelihood change) include:
   i. Opportunities for improving influencing conditions (e.g. confidence, social norms, gender bias, etc.)
   ii. Opportunities for improving access to supporting services (e.g. education, health care, sanitation etc. (IMM Ltd 2008).

The terms Alternative Income Generating Activity (AIGA) or Alternative Livelihood Project ("ALP") are widely used in conservation and development sectors aiming to *"change or enhance the livelihoods of local people … to reduce reliance on natural resources, generate economic benefits and increase local support for conservation"* (Wright *et al.* 2015 p.8). However, in the literature ALP's are 'poorly defined' and there is no consistent or universal definition of what constitutes an ALP (Roe *et al.* 2014).

Ireland (2004) noted that AIGA/ALP mean either:

- Activities that allow or necessitate a choice between two or more options – this may include expanding or modifying existing livelihood activities (livelihood diversification); or
- Activities that exist outside of traditional or established activities (providing completely new activities).

In the context of the Coral Triangle Initiative – Coral Reef Fisheries and Food Security ("CTI-CFF") program and a recent review (Pomeroy 2013), three approaches to ALP initiatives in the context of fisheries management were identified :

1. *Enhanced livelihoods* (adding value to existing strategies – e.g. value chains). This approach is generally more likely to be taken up by communities because it is already connected to existing livelihood strategies.
2. *Supplemental and diversified livelihoods* (aimed at reducing household dependence on a single livelihood for income and food – i.e. a particular form of fishing). "A diversification strategy sometimes includes elements of enhancing existing livelihoods *and* adopting 'supplemental' strategies (making current practices more sustainable)" (Pomeroy 2013:4). These are considered less risky than new strategies but require more investment and can potentially reduce pressure on natural resources.
3. *Alternative livelihoods* which require more support and investment. particularly from a financial and technical resources perspective. However, it is riskier as it requires a complete switch of livelihoods through changed occupations and often fishers do not maintain the new livelihoods.

In a conservation and development context an ALP intervention may involve: i) people switching to harvest an alternative resource, ii) developing an alternative occupation or source of income, or iii) implementing an alternative method of exploiting a resource that has a lower impact than the original method (Roe *et al.* 2014). An ALP may be implemented as a standalone initiative or part of a larger conservation and development program as in the case of the integrated conservation and development ("ICAD") programs which have been commonly implemented in the conservation sector (Roe *et al.* 2014).

In the context of conservation, Wright *et al.* (2015) identify three categories of ALP Interventions:

1. Alternatives which provide a substitute for the monetary or non-monetary outcomes obtained from exploitation of natural resources which can be in the form of:

   i. Activity to provide an alternative resource to the one being exploited (i.e. fish to chicken); or
   ii. Providing an alternative occupation (i.e. farming to building); or
   iii. Encourage alternative methods of exploiting a resource (i.e. using fuel stoves vs timber for cooking) which has lower impact;
2. Compensation - for losses incurred in not accessing areas; or
3. Incentives schemes (e.g. payment for ecosystem services ("PES")).

Wright *et al.* (2015) identified three problematic assumptions underlying these broad categories of ALP interventions. Firstly, that providing alternatives will reduce people's need and desire to exploit a resource. Evidence shows this is generally not the case as alternative incomes become supplementary and may subsidise continued exploitation. Also, people will not necessarily forgo short term gains for the sake of improving methods (reducing damage) when exploiting a resource. Secondly, that those communities are homogenous and community level implemented ALPs will have widespread uptake. Thirdly, ALP interventions targeted to individuals will scale up from individual to household, and have a community level impact.

Sievanen *et al.* (2005) also reported incorrect assumptions underlying implementation of alternative livelihoods (ALP) by some development agencies and policy makers in coastal communities, these are:

- that all small scale fishers are poor (see also Bene & Friend 2011);
- that fishers will give up lucrative fishing for lower returns (e.g. shark fishing to seaweed farming); and
- that alternative occupations will reduce pressure on natural resources.

These issues were examined in relation to the introduction of seaweed farming in Indonesia and the Philippines, and the results were varied. They found that the introduction of seaweed farming did have an impact on fishing effort (reduction) in Indonesia (Nain Island, north Sulawesi), but not have the same impact in sites in the Philippines.

Wright *et al.* (2015) and others (e.g. Briggs 2003) advocate that in order to be an appropriate substitute an ALP should align with the same functions (i.e. provide income, job satisfaction, other non-tangible benefits, etc.). Pollnac *et al.* (2001) indicate that small-scale fishermen a) like their occupations and b) are bound to it by indebtedness, hence only a minority would leave fishing for an alternative (Crawford 2002).

The ALP should also ensure that benefits are generated for the people who are the most needy or vulnerable and that the ALP be based on a strong understanding of the ways resources are used and accessed by different members of society, as well as the social and political context in which they are implemented. Even if a household does change their behaviour, many socio-economic influences can affect this ALP such as external market forces, policy and other dynamic aspects to livelihoods. If interventions fail to take account of these issues, they are likely to fail (Wright *et al.* 2015).Research has also indicated that even if fishers take up an alternative they may switch back to their original livelihood (Sievanen *et al.* 2005).

Ireland (2004) notes that the idea behind AIGA is that alternative livelihoods create an incentive for people to cease unsustainable activity and/or take up another activity which is sustainable, but for this to be successful the replacement activity must provide equal or more income than the one being replaced.

In the RFLP in NTT, a baseline study reported that for coastal communities many alternative livelihoods are reliant on natural resources – either marine or terrestrial – which can have sustainability issues, while the availability of other services to support livelihood enhancement such as infrastructure, transport and access to markets are also often limited (FAO 2013). The FAO-supported study also

found that most fisher households interviewed were not satisfied with the availability and quality of livelihood enhancement, diversification and existing support services (which included government programs such as donation of fishing gear through aid). The study also reported limited access to financial capital, limited skills and limited capacity (to identify/find other economic opportunities) as constraints for livelihood diversification (FAO 2013). In west Sumatra inappropriate targeting of donated fishing gear aid drove fisher dissatisfaction (Stanford *et al.* 2014).

5. Review of lessons and recommendations for improved livelihood outcomes

The literature highlights the limited evidence demonstrating improvements in coastal community livelihoods through interventions (Bebbington 1999; Crawford 2002; Carney 2003; Ireland 2004; Brugere *et al.* 2008; Torell & Tobey 2012; Pomeroy 2013; Stanford *et al.* 2014; Wright *et al.* 2015). In fact, there are far more documented examples of alternative livelihoods activities that have failed to achieve their desired goals than there are those that have succeeded. This It also shows that sustainable livelihood interventions can be flawed at both the conceptual and operational level because, despite worthy goals and objectives, they often fail to account for the complexities of existing livelihoods by moving people into new livelihood activities through externally driven interventions (de Haan & Zoomers 2003; Wright *et al.* 2015; Steenbergen *et al*. 2017). Many interventions are established on an incomplete understanding of community social dynamics (Brugere *et al.* 2008); implemented within short time frames and without good quality empirical research (Wright *et al.* 2015), monitoring and evaluation (Bennett 2010); and lacking skilled facilitation and participatory approaches (IMM Ltd 2008), and assessments of social, economic and cultural feasibility of initiatives (Pomeroy 2013).

Furthermore, there appears to be little evidence that alternative livelihood interventions on their own will be successful in improving outcomes (Ireland 2004). Wright *et al.* (2015) argue that failure in livelihood enhancement projects stems from shortcomings in the design of projects, which lack a strong livelihoods assessment and analysis framework, and understanding of the social context within which livelihoods are constructed.

Academics and practitioners from different disciplines have recently called for a review of approaches in conservation and development circles, due to the little evidence of ALPs having a positive impact on biodiversity, or reducing pressure on natural resources, or improving livelihood portfolios. They have made various recommendations for improved practice, policy management and research (Ireland 2004; Brugere *et al.* 2008; IMM Ltd 2008; Bennett 2010; Torell & Tobey 2012; Roe *et al.* 2015; Wright *et al.* 2015;). In a recent report by FAO (2016c p.108) it was highlighted that there remains a need for empirical research on:

- Impact of changes of management and conservation regimes on livelihoods of small- scale fisherfolk and on poverty and vulnerability;
- Case studies of successful diversification of small-scale fishing effort to offshore resources; and
- Case studies of successful occupational diversification of small-scale fishers' livelihoods.

Steenbergen et al. (2017) in a recent paper consider policy forces guiding or influencing approaches to sustainable coastal livelihoods in the Arafura and Timor Seas region. They argue the influence of neoliberal conservation science crisis narratives driving alternative livelihood programs and 'top down' multiple layers of governance against the dynamism of coastal livelihoods.

This section profiles some of the views and practical suggestions from the wider published and unpublished literature.

Ireland (2004) advocated that a better understanding of existing livelihoods was needed by applying a sustainable coastal livelihoods analysis based on the adapted SLF. This would help identify interventions to improve existing livelihoods rather than alternatives. Such an approach would have a greater chance of success to improve livelihoods. Three approaches to improving livelihoods and sustainable natural resource based livelihoods are recommended, these are:

1. The need to better understand the drivers of unsustainable resource use in the local context before interventions.
2. The need for alternative livelihood projects to better incorporate the wider dimensions of people's existing livelihoods (e.g. through SLA).
3. Provide enterprise development support for ALP with business planning, skill building etc. (Ireland 2004).

If alternative livelihood interventions are required, the following set of questions should be considered prior to alternative livelihoods being introduced.

Key questions for proposed alternative livelihood activities

1. *Does the alternative relate to the needs and aspirations of the poor?*
2. *Is the alternative viable and suitable (from an economic, environmental, institutional, social and cultural perspective)?*
3. *Can the alternative accommodate the number of people concerned in line with markets for the level of goods and services to be produced?*
4. *Does the alternative have acceptable levels of risk to the poor whilst not increasing their vulnerability?*
5. *Does the alternative build on existing strengths and assets (building blocks) of the poor?*
6. *Is the alternative in harmony with existing livelihood strategies and does it fully accommodate gender and socio-economic differences?*
7. *Does the alternative complement existing strategies of other people in the community?*
8. *Does the alternative conform with national policies and legislation?*
9. *Does the alternative enhance the independence of the poor?*
10. *Does the alternative ensure the rights of the poor?*
11. *Can the alternative enhance the innovative capacity, vision and adaptability of the poor to cope with future changes to their livelihoods?*

Source: Reproduced from Ireland (2004 p.53).

Wright *et al.* (2015) recommended applications of the SLA to assess behaviours with adverse environmental effects, and target interventions within livelihood strategies to households or communities who are engaging in activities with the greatest environmental impacts, and who are most vulnerable to restrictions on access to resources important in livelihood outcomes. This should be supported by a strong understanding of the wider socio-ecological system and macro level influences in which livelihoods strategies are constructed. They also suggested moving away from the

term ALP to 'livelihood-focussed intervention', to remove the idea that livelihood improvement equates with substitution and adopt a more encompassing holistic approach to livelihood well-being.

Roe *et al.* (2015) highlighted the need for improved reporting and post-project monitoring in a systematic review of the effectiveness of 106 ALPs (44% within Asia) focused on biodiversity and conservation improvement. The ALPs were evaluated by positive changes in attitudes or behaviour of people toward the biodiversity target (e.g. a particular habitat or species). It was found that it was difficult to capture the benefits as few projects had reported on outcomes and even fewer had undertaken post-project monitoring. This limited the evidence available to assess impacts despite the large financial investments in ALP in the conservation sector.

Roe *et al.* (2015) also note that there was insufficient evidence to identify which " *types* of projects are more successful than others, and thus broader scaling up of findings is problematic"(Roe *et al.* 2015 pp.19-20).[40]

Roe *et al.* (2015 p.20) provided a further nine recommendations for ALP policy and management including:

1. A review of previous ALPs in each area.
2. An adaptive management framework.
3. Application of a theory of change approach.
4. The identification of biodiversity targets to be achieved and a monitoring system.
5. A stronger assessment of socio-economic and cultural risks of an intervention.
6. An assessment of the sustainability of the intervention.
7. Stronger project design with monitoring.
8. The sharing of lessons including positive and negative outcomes or benefits and experiences of ALPs.
9. A set of best practice guidelines for the evaluation of ALPs to progress research in conservation.

A USAID-funded review of best practices and lessons from conservation enterprise strategies for coastal and marine development projects during 2004-2008 (Torell & Tobey 2012) outlined approaches and options for livelihoods to address pressures on marine ecosystems and resources. They defined a conservation enterprise as a commercial enterprise that generates profit and equitable benefits through promoting sustainable use in areas of high biodiversity. The income generated from these enterprises provides incentive and motivation to protect and conserve the biodiversity and ecosystems to maintain that income. Examples include marine ecotourism, crafts, aquaculture, agroforestry, mangrove crab grow-out, and adding value to existing SSF. Common to these enterprises is that they are natural resource based and thus differ from other types of non-natural resource based enterprises. The review identifies some defining characteristics of these enterprises, including seasonality influences on production cycles, ecosystem services integrity, trading, and value chain. It notes that poor sectors of society are often more dependent on natural resources harvesting and that national level services and infrastructure to support marketing is often lacking. Alternative income producing technologies can also help replace destructive gear and equipment and minimise environmental impacts. Reducing fishing effort often also involves people moving into diversified or alternative enterprise activities, but this has many challenges.

Fisheries are typically open-access, which leads to overharvesting and overcapacity, conflict among fishers and poor returns due to competition. Conversely, open-access systems can operate as a safety net providing access to food. Alternative livelihoods to fishing are introduced to relieve pressure on

[40] *See also Bennett (2010:13) for a list of lessons on livelihoods and conservation from previous research*

open-access fisheries. Studies have shown that fishers are often reluctant to change professions or occupations, and that access to marine resources allows them- a 'short term survival strategy' of daily catches for subsistence and small incomes. Also if fishers move away from an open-access system there are usually many others who will continue to fish (Torell & Tobey 2012 p.14). They argue that alternative livelihoods will only be successful to reduce overfishing when they are coupled with *incentives*. These can that include limited entry, buy back schemes, gear and vessel restrictions, catch limits and quotas. The other strategy promoted is to encourage *livelihood diversification* (as in the SLF). The focus would be on widening the options households engage in to reduce vulnerability and adjust to changes from conservation, limitations on resource access, and restrictive management of marine resources. One of the problems is that such measures are often implemented *after* a conservation initiative and too late for benefits to accrue to communities and fishers (Wright *et al.* (2015).

The review also identified a summary of best practices and success factors for developing conservation-based marine enterprises (Torell & Tobey 2012 p.70). Best practices for establishing coastal microenterprises included assessing current livelihoods, assets and incentives of households, the causes of vulnerability and gender issues and inequities, feasibility assessment for new enterprises, and clear direct relationships between the enterprise activity and biodiversity targets or conservation of natural resources. Torell and Tobey (2012) argued that unless an enterprise was established as part of a larger conservation or NRM goal or program, it would not achieve conservation goals on its own. Success factors related to conservation enterprises included: leadership, partnerships, business planning and marketing (with attention to development of existing markets), realistic expectations, triple bottom line benefits, short- and long-term benefits, strong organisation and community engagement approaches, access and tenure (or control) of natural resources by user groups/entrepreneurs, and supportive government enabling conditions.

Pomeroy (2013) sets out an 8-step process for development of coastal livelihoods which should include: target area definition, community entry and integration, assessments of resources, needs and opportunities, education and capacity development, livelihood options plan, livelihoods implementation (including social, technical policy and infrastructure and market feasibility), long-term sustainability plan and adaptive learning through monitoring and evaluation.

Another area identified as a prerequisite to improving coastal and SSF livelihoods is increasing financial investment in marine and fisheries resources management and governance (APFIC 2010; Prescott *et al.* 2015). Local government often accrues financial benefits from fisheries but rarely reinvest these back into fisheries management and governance (APFIC 2010). Development of a range of microfinance services and options for small-scale coastal fisheries and aquaculture is also considered important to support livelihood diversification (see APFIC (2010) which includes a comprehensive coverage of SEA countries, including Indonesia, and approaches and women and provides recommendations and best practices and opportunities).Other approaches advocated include flexible livelihood program support with financial and business services rather than top down externally conceived technical interventions; feasibility analyses; building on peoples' aspirations and existing strengths and assets within existing institutional arrangements; monitoring and evaluation based on good quality participatory baseline assessments; and post impact assessment (APFIC 2010).

Brugere *et al.* (2008) highlight the need for government schemes and policies (e.g. removal of financial, legal and fiscal barriers such as market access, transport and commodity taxes) to promote diversification of fisherfolk livelihoods by increasing the number of income activities undertaken for livelihood security (2008 p.5). This can be either within or outside of fisheries.

Further, some academics (e.g. Roe *et al.* 2015) have suggested that given that households usually have a diverse portfolio of livelihood activities, introducing a new activity may not actually act as a

replacement but be added to an existing portfolio, and may therefore not be effective at reducing threats or pressure on natural resources (Roe *et al.* 2015).

Mills *et al.* (2017) suggest that any livelihood improvement programs should be considered within the context of the existing household livelihood portfolio and interactions amongst activities and that fishery-only targeted interventions are likely to be ineffective. Further, they argue that fishery management need to take into account the complexity and dynamism associated with fishery-related livelihoods and livelihood intervention programs need to be implemented alongside resource governance and management actions, although this appears to have been rarely the case.

The concept of alternative livelihoods activities is often to create economic incentives for people to stop their current, non-sustainable practices in favour of a more sustainable activity. If this is to be successful, alternative activities must at least be more profitable (Ireland 2004). However, profit alone may not be sufficient to encourage people to change their livelihoods activities.

If there are no additional programs to reduce fishing effort through alternative livelihoods, activities may not reduce effort at all and capital gained from additional activities may be invested into fisheries, thereby resulting in a counterproductive increase in fishing effort (Sievanen *et al.* 2005). Even if some people do move away from previous fishing activities, population pressures may mean that others move in to replace them.

In a study associated with COREMAP Program in the Spermonde archipelago in South Sulawesi, Brock (2013) found that the introduction of microcredit scheme for livelihood alternatives to reduce fishing pressure was not successful in changing fishers behaviour and developing new non-fishing related livelihood strategies.

A study by Stanford *et al.* (2013) in West Sumatran coastal communities recommended that livelihood improvements to alleviate poverty in small scale fisheries should be targeted in regions where they are most needed (i.e. the poor fishers). In a related study Stanford *et al.* (2014) identified 31 enabling factors and constraints relating to livelihood development in coastal communities according to SLF asset classes.

The literature highlights the impacts of long term marine resource degradation as a result of many complex factors and causes – locally or by externally drivers – on reduced livelihood outcomes for coastal peoples (IMM Ltd 2008). Responses to environmental degradation often involve restricting local people's access through establishment of MPAs or no-take areas. Although such measures can offer protection and improve environmental services, especially in the long term, this can result in sudden negative livelihood shocks in the short term and have adverse livelihood impacts (IMM Ltd 2008). In some cases the impacts can result in other illegal activity (e.g. Brugere *et al.* 2008; Carnegie 2014) and criminalisation of livelihood activities (IMM Ltd 2008). This can lead to illegal activities in order to continue to make a livelihood when limited choices are available as in the case with some SSF in eastern Indonesia (e.g. Carnegie 2014; Missbach 2016).

Alternative livelihood projects implemented for the benefit of fishers in response to loss of access to fishing areas (such as MPAs) "remain often anecdotal or weakly sustainable" (Garcia et al. 2013 p.30, cited in Bene 2016), and "rarely maintain long-term positive economic benefits for the stakeholders involved" (Bene 2016 p.135).

In many cases 'alternative livelihoods' projects are implemented to shift pressure or dependence from marine resource related livelihoods after a conservation or marine management initiative has commenced, when communities are already having to cope with negative impacts or displacement from fishing areas (IMM Ltd 2008). When people cannot adapt to changes in resource access, they are likely to find livelihood outcomes reduced (IMM Ltd 2008).

Practitioners have argued that it is necessary to give users options to diversify away from resources before access is restricted (IMM Ltd 2008). The process of developing livelihood alternatives should be seen as a means of enhancing their livelihoods (not only ensuring they remain unchanged) but also build their capacity to take advantage of new opportunities that MPAs can create (IMM Ltd 2008). This process should be phased in, giving people capacity to adapt to change in access to marine resources alongside environmental protection measures to enable realisation of maintenance and improvement of livelihood outcomes over time (IMM Ltd 2008).

The literature also highlights the limited success and long term sustainability such alternative livelihood projects have had in these contexts where single livelihood interventions have been implemented without considering the broader livelihood social, economic and political context of communities (IMM Ltd 2008). Practitioners have suggested that creating a strong enabling environment is necessary when livelihood interventions are being implemented in terms of i) enabling agencies (which can include politicians, economic elite, religious or cultural leaders, decision makers, people with influence or power), and ii) service providers (whether those provided by government such as extension services or private sector) (IMM Ltd 2008). Past failures of some projects have been because of reluctance to engage with these influential people. Engaging with the 'patrons' or bosses is a necessary component to any fisheries livelihood improvement program due to the strong social linkages between fishers and patrons (Crona *et al.* 2010; Gunawan *et al.* 2014; Kusumawati & Visser 2016).

Glaser *et al.* (2015) reported on the limited success of mariculture projects implemented in the Spermonde archipelago in South Sulawesi and failure due to local corruption and power differentials exhibited through influential leaders and *ponggawa* relationships. Future livelihood initiatives need to be better targeted towards "those whose current ecosystem use undermines sustainability (e.g. fishermen using destructive techniques) and avoiding elite capture of extension benefits and services"(Glaser *et al.* 2015 p.202-203).

Every (2016) reported on the failure of livelihood improvement initiatives under the COREMAP program in Maumere Bay, Flores, NTT, due to social exclusion of Bajau fishing groups and elite capture of government aid and funding from COREMAP channelled through fishing cooperatives. This also relates to limited research and evidence regarding livelihood construction and complexity and inhibitors to livelihood diversification (e.g. marginalisation and social exclusion (Every 2016)). Vulnerability and exclusion are seen as significant causes of poverty in SSF communities (Allison & Horemans 2006; Allison & Springate-Baginski 2009; Bene & Friend 2009). Vulnerability is also associated with poor adaptive capacity and sensitivity to risk due to high dependence on fishing livelihoods. Every (2016) found that the primary causes of vulnerability in Bajau communities in Flores, NTT, Indonesia were increased social exclusion and marginalisation linked to inappropriately targeted interventions; exposure to natural hazards and limited capacity to derive benefits from the small-scale purse seine fishery. These vulnerabilities also constrained livelihood diversification. The research findings highlighted that government aid programs devised to alleviate poverty and improve resilience in natural resource-dependent communities may actually increase vulnerability and poverty.

Livelihoods diversification to seaweed cultivation for example, has potential to supply a regular, recurrent (seasonally-dependent) income, but comes with a high risk of failure due to disease, resulting in potentially long breaks in production and increased livelihood vulnerability. Seaweed production may supplement other livelihood strategies, but could also lower stockpiles of agricultural-based food sources to be used during the 'hungry seasons' in some mixed fishing-farming communities (e.g. Sabu Island in NTT Indonesia). Essential elements for any alternative livelihood scheme in these communities include: i) the need for land-based projects for women, ii) provision of micro-credit, and iii) funds for children's education (Fox, 2010).

In a recent design for the CTI-CFF Coastfish program in the context of sustainable livelihoods and an ecosystem approach to fisheries management, Pomeroy (2013 p.5) argued that "conventional fisheries management practices have been largely unable…to incorporate the development of livelihood alternatives into fishery policy and management approaches". Part of the problem lies with the agency responsible for management lacking capacity and community development knowledge to deal with livelihoods and their complexity. Further, Pomeroy (2013 p.6) cautions that "efforts to develop livelihood opportunities should not be seen as a panacea to solving fishery problems". Perhaps one of the best options for livelihood sustainability for a fisher is a well-managed fishery.

Brugere *et al.* (2008) argue for the need for more research to consider the linkages between uptake of livelihood diversification and impacts on the state of the fishery. Programs need to engage more strongly with policy issues to support diversification and fisheries management considered within the context of fisher household's livelihoods and social, economic and natural capital contexts.

As a tool to alleviate poverty (Chok *et al.* 2007), tourism is often seen as an alternative livelihood for small-scale fishers, particularly at sites with declining fisheries productivity (Young 1999). In particular, marine wildlife tourism is often seen as a way to reduce pressure on charismatic megafauna species (e.g. sea turtles, whales, sharks)(Wilson & Tisdell 2003; Vianna *et al.* 2012). However, it also comes with adverse impacts to target populations, including evasive tactics, disturbance to the animals' activities and habitat abandonment (Higham *et al.* 2016). Tourism can offer some potential benefits.

In summary, drawing from the range of practitioner and academic views from conservation, development and fisheries management research there is general consensus on best practice approaches for improving livelihoods of coastal communities, in light of limited successful examples of livelihood improvements. These suggestions range from methodological (use of adapted SLF, best practice guidelines and improved on ground practise); to improved project planning, design, implementation and monitoring/evaluation. Good quality multidisciplinary feasibility assessments are necessary to ensure impacts on those most vulnerable are minimised or that interventions are targeted towards the most needy. Understanding the social, economic, cultural context and governance systems and drivers are just as important as the environmental context. Given sustainable livelihoods rely on diversity, interventions need to consider portfolios of livelihood strategies as part of linked social-ecological systems and not consider particular livelihoods (e.g. fishing) on their own. Projects require good support services such as business planning, skills, knowledge and learning and long-term support - invariably support is short term within project and funder time frames, but this is not in line with community realities. Incentives, microfinance are also identified as important and interventions needs to be able to connect directly with impact on natural resource sustainability – as the evidence has clearly shown these linkages between alternative livelihoods and natural resource sustainability from past attempts are weak.

Recommendations from literature review

Following the literature review, we identified several recommendations for further research, capacity building and livelihood development to support small-scale fisheries, gender and coastal livelihoods in Indonesia. These complement other recommendations from our evaluation of 20 livelihood projects during the project (refer to full project report). The recommendations have been grouped into two major headings: General Recommendations for SSF and Gender-specific recommendations for SSF research and capacity building:

General recommendations for small-scale fisheries

1. **Adapt a Sustainable Livelihoods Framework** (SLF) for assessing, analysing and evaluating coastal livelihoods (building on the SLF through Sustainable Coastal Livelihood Framework IMM Ltd (2008)) to provide a model for understanding of livelihoods and their context and to measure, monitor and evaluate livelihood interventions, their viability and risks (in English and Bahasa Indonesia).

2. **Develop supporting training and research materials** to undertake Sustainable Livelihoods Analyses and gendered analyses in the Indonesian SSF sector (as identified under the *ACIAR – Australia Indonesia Strategic Plan in Fisheries 2015-2025*, including gender research and engagement with women in management and policy development).

3. **Test and apply these tools** to a selection of case studies of small-scale fisheries (identifying the most vulnerable marine resource dependent small-scale fisher populations) in Indonesia. Develop this research through discussions and collaborations with communities, Government, University and NGOs agencies involved in fisheries management and livelihood policy development.

4. **Identify interventions** in cases studies to promote sustainable coastal livelihoods and identify entry points, i.e. aspects of livelihoods within the SLF, where interventions can best be implemented (e.g. relating to assets, gender, vulnerabilities, policies, etc.) with case studies.
   - Identify fisheries and natural resource management opportunities to support livelihood diversity.
   - Apply a field school and learning centre approach (similar to the Fish Farmer Field School used with small scale shrimp producers in Sulawesi and Locally Managed Marine Areas programs) to support livelihood diversification programs (see ACIAR Project Final Report Appendix case studies #13 and #14) and their dissemination to other SSF communities.

5. **Undertake new empirical, action/applied research** on livelihood diversification to assess impacts and generate empirical evidence for success factors leading to reduced pressures on marine resources.
   - Early and effective community participation in programme design and implementation as well as post-project support is crucial.
   - Apply meaningful participatory action research based on SLA principles by putting science at the disposal of local communities and actively involving fishers and resource user groups in the research. This includes involvement in defining the research required to assess assets and the potential for sustainable resource use.

Gender specific recommendations for small-scale fisheries:

6. **Undertake research studies** to explore the social structures and power relations resulting in the gender differentiated access to, and control over, livelihood assets. This has important

implications that affect the ability of men and women to participate in governance and policy, achieve social-ecological resilience to change in global processes and the environment and livelihood sustainability. The proposed research should:

- Estimate women's participation in Indonesian fisheries and their contribution to the economy and food security through direct participation in, and indirect support of, SSF.
- Quantify the catches and value-adding activities of women in SSF communities,
- Provide information on the access to and use of fisheries resources by women to be included in estimating the total level of human pressure on marine ecosystems and species.
- Collect data on women's ecological knowledge of fisheries, an untapped resource in data poor fisheries management systems.
- Investigate ways to increase women's decision-making capacity in SSF for improved fisheries management and policy. This will improve the equity of women in the allocation of resources and decision-making around those resources.

7. **Collaboration**. An important source for gender and fisheries research is that promoted through the Gender in Aquaculture and Fisheries Network (GAF) and formal Gender in Aquaculture and Fisheries section established under the Asian Fisheries' Society.[41] This network should be supported and promoted in Indonesia as a community of practice and source of resources to promote gender and fisheries research. It also provides a network for discussions and potential collaborations among scientists, academics, technicians, fisheries officers, and Government and NGO workers to facilitate research activity, sharing of information and publication of results. [42]

[41] http://genderaquafish.org/

[42] http://genderaquafish.org/2017/02/03/join-gafs/

Appendices

Appendix 1: Gender and Livelihoods in Indonesian SSF / Aquaculture Case Studies

Note: The papers listed here provide some degree of gender analysis, rather than just describing activities of men and women.

Author	Title	Publication details	Location	Key findings
Alami, Athiqah Nur and Raharjo, Sandy Nur Ikfal	Recognising Indonesian fisherwomen's roles in fishery resource management: profile, policy, and strategy for economic empowerment	Journal of the Indian Ocean Region (2017) 13:1, 40-53	Talaud Islands, North Sulawesi	Uses Harvard Gender Roles Framework to analyse and map men's and women's roles in fishery sector. Men and women both participate in fishing and fishing-related activities, although women also undertake preparatory tasks to support their husbands fishing activities, as well as all reproductive tasks. There is limited inclusion of women in fisheries policy frameworks because of an institutionalised focus on the catching of fin-fish and lack of understanding of women's activities. Women are not economically empowered; they have limited capacity to increase the value of their activities (e.g. value-adding by improved post-harvest storage and processing, enhanced capacity for bargaining to increase value of fish in market) and limited access to resources such as microfinance.
Anna, Zuzy	The role of fisherwomen in the face of fishing uncertainties on the north coast of Java, Indonesia	Asian Fisheries Science Special Issue, Vol25S (2012), 145-158	Northern Java	Women's contribution includes providing logistic support for fishing and they are the main players in fish selling, distribution and processing. Families with male and female engaged in fishing livelihoods are especially vulnerable to uncertainty and women often took on extra work to compensate for their husbands low or variable earnings from fishing. Social networks (and women's roles in them) are important in surviving uncertainty and hardship; for example, 'Arisan' – women's community savings groups are an important safety net.
Every, Frances	Livelihoods, Vulnerability and Marginalisation of a Bajo Community in Wuring Laut, Eastern Indonesia	Masters Thesis, Charles Darwin University (2016)	Waring Laut, Flores Island	Women mostly responsible for trading and processing fish. Women take loans from private money-lenders to finance the purchase of fish from middlemen and then sell the fish to pay for household expenses. Women lack access to affordable credit, cold storage and preservation equipment and space. Women were also excluded from traditional trading space by government policy and forced to incur additional expenses to trade in worse conditions at a distant market, increasing their vulnerability.
Fitriana, Ria and Stacey, Natasha	The role of women in the fishery sector of Pantar Island, Indonesia	Asian Fisheries Science Special Issue, Vol25S (2012), 159-175	Pantar Island, Nusa Tenggara Timur	Women were engaged in preparing fishing equipment for their own fishing activities in mangrove, intertidal and inshore coastal areas. They also caught fish with handlines or fish traps and collected invertebrates (gleaned); some women fished from outrigger canoes. Women were also

Author	Title	Publication details	Location	Key findings
				involved in all activities (save transporting it to buyers) of seaweed farming. Women were active in post-harvest activities such as processing and sale of fish and mussels. Fish were often sun-dried.
Fitriana, Ria	Assessing the Impact of a Protected Area on Coastal livelihoods: A case study from Pantar	PhD Thesis, Charles Darwin University (2015)	Pantar Island, NTT	Considers the role of women and men in MPA as well as the impacts of zoning on women's livelihood strategies and women's participation in seafood value chains.
Gaynor, Jennifer L.	Flexible fishing: Gender and the new spatial division of labor in Eastern Indonesia's rural littoral	Radical History Review, Issue 107, 2010		Changed livelihood practices in among Sama have seen differences in roles strengthened – women's historic participation in fishing diminished with uptake of modern technology which is male-dominated, and changing socio-cultural expectations which require women to stay close to home. Women (described as a labour surplus given less participation in historic fishing activities) are involved in deshelling crab and pearl-culturing (this is done in decentralised workshops).
Niehof, Anke	Fish and female agency in a Madurese fishing village in Indonesia	Moussons: Recherche en sciences humaines sur l'Asie du Sud-Est, Vol 11, 2012	Madura	There was a strict gendered division of labour; men caught fish and women managed all post-landing activities
Schwerdtner Manez, Kathleen and Pauwelussen, Annet	Fish is women's business too: Looking at marine resource use through a gender lens	In Schwerdtner Manez, K. and Poulsen, B. (eds) (2016) *Perspectives on Oceans Past*, Springer, pp.193-211	Bajau communities, Berau, East Kalimantan	Women's contribution to fisheries and their social networks are indispensable to the organisation and continuance of Bajau marine livelihoods. Women glean for giant clam, take of which is prohibited, and preside over trade with Malay-Chinese trades. Women collectors engage in patron-client relationships with women traders (preferred due to culturally acceptable same-sex contact). Women cultivate real and imagined family/Bajau networks through which trade is negotiated.

Appendix 2: Examples of proposed research questions for gender and small-scale fisheries

Examples of gender and SSF-related research questions identified by the "Gender in Aquaculture and Fisheries" section of the Asian Fisheries Society include:

Gleaning:

- What is the legal recognition of gleaning; how is this changing and how is this gendered? Are gleaners being recognised as fishers, or are they marginalised in policy?
- What are the gender implications of access to gleaning resources when previously undervalued species become global market commodities (e.g. sea cucumber, abalone, octopus)? What happens to subsistence gleaners?
- What happens to subsistence gleaners when previously open gleaning areas are no longer available; e.g. when new spatial management is implemented? What happens to gleaners and the gendered space/activities and decision making?

(by Danika Kleiber, https://genderaquafish.org/portfolio/gleaning/, posted June 22, 2015)

Diving:

- How does the rise of tourism affect women divers?
- What factors affect women's participation in fisheries governing bodies (e.g. Fishing associations or cooperatives) or acquiring positions of influence in decision-making?
- How does the changing political, social, economic and cultural environment affect women diver's livelihood strategies? How do these changes affect women's well-being and aspirations?
- How are women divers connected to markets and what is the extent of their bargaining both in production and marketing?

(by Enrique Alonso-Poblacion, https://genderaquafish.org/portfolio/women-divers/, posted March 7, 2016)

Further research areas in aquaculture from a review by Weeratunge *et al.* (2010) include:

- How does small-scale aquaculture affect the gendered division of labour within households? Does it increase women's time burden?
- How does the gendered division of labour affect comparative gains for men and women (income differentials), their social status and well-being and how have these changed over time?

Appendix 3: List of websites and resources currently available for gender-related agricultural research and livelihood development monitoring and impact evaluations

Many of these resources are profiled and available through the Gender and Fisheries Network https://genderaquafish.org/resources-3/genderwomen-in-aquaculture-and-fisheries-networks/

Other resources are profiled in Appendix 1 of Matthews et al (2012). *A Gender Perspective on Securing Livelihoods and Nutrition in Fish-dependent Coastal Communities*. Report to The Rockefeller Foundation from Wildlife Conservation Society, Bronx, NY.

CGIAR standards for collecting Disaggregated Data for Gender Analysis

IFPRI 2014 http://pim.cgiar.org/files/2012/05/Standards-for-Collecting-Sex-Disaggregated-Data-for-Gender-Analysis.pdf

http://gender.ifpri.info/2016/05/31/webinar-data-and-information-management-tools-for-the-cgiar-gender-and-agriculture-research-network/

http://gender.ifpri.info/2016/01/21/launch-of-new-world-bank-gender-data-portal/

http://gender.ifpri.info/2014/10/08/updated-gaap-toolkit/

https://www.slideshare.net/IFPRIGender/qualitative-methods-in-gender-research-ifpri-gender-methods-seminar-38429421

Gender in Agriculture Sourcebook (2009) Module 13: gender in fisheries and aquaculture, pp. 561-600., WB, FAO and IFAD. In: World Bank, Washington, DC.

http://siteresources.worldbank.org/INTGENAGRLIVSOUBOOK/Resources/Module13.pdf

Kleiber D., Harris L.M. and Vincent A.C.J. 2014. Gender and small-scale fisheries: A case study for counting women and beyond. Fish and Fisheries Vol. 15 Issue 3. DOI: 10.1111/faf.12075 note that specific fisheries research methods in the past have been 'gender blind' contributed to data gaps on women and fisheries and that stronger gender approach is needed

UBC Project by Harper on building a global sex-disaggregated fisheries participation database https://genderaquafish.org/events/2016-iifet-gender-special-session/

http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/60160/Sumaila189ppt.pdf?sequence=1

http://ir.library.oregonstate.edu/xmlui/handle/1957/60160

IFAD

https://www.ifad.org/topic/resource/tags/gender/2088624

FAO

http://www.fao.org/docrep/019/ar284e/ar284e.pdf

Lentisco, A. (2012). Gender Mainstreaming Strategy for the Regional Fisheries Livelihoods Programme (RFLP) for South and Southeast Asia (GCP/RAS/237/SPA)

Arena MC and Lentisco, A (2011) Mainstreaming Gender into project cycle management in the fisheries sector, FAO regional office for Asia and the Pacific, Bangkok RAP Publication 2011/15

FAO. 2017. Towards gender-equitable small-scale fisheries governance and development – A handbook. In support of the implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication, by Nilanjana Biswas. Rome, Italy.

UNESCO

The UNESCO Water and Gender Program has a dedicated web page and prepared guidelines and questionnaires for collecting sex disaggregated data for water projects.

http://www.unesco.org/new/en/natural-sciences/environment/water/wwap/water-and-gender/

http://unesdoc.unesco.org/images/0023/002345/234513E.pdf

http://unesdoc.unesco.org/images/0023/002345/234514E.pdf

Participatory Livelihoods Monitoring

ftp://ftp.fao.org/docrep/fao/009/ah455e/ah455e00.pdf

Turrall S. and Studd K. 2009 Capturing Change in People's Lives and Livelihoods within Programmes Learning from Good Practice and Experiences of Conservation/ Development Organisations to inform WWF practice
https://www.povertyandconservation.info/docs/20090805-Methods_and_Tools_for_Programmes-WWF.pdf

Govan, H 2011 How can we support communities to build on what they have for a better life? Supplementary Livelihoods in the Pacific; FSPI Report, Suva, Fiji. http://bit.ly/MTa

WorldFish recent resources

WorldFish Gender Equity website

http://worldfishcenter.org/content/gender-equity

Podcast

- Overcoming gender-related barriers in small-scale fisheries – 5-minute podcast with WorldFish's Dr. Pip Cohen.

Special feature

- Why gender equity matters in fisheries and aquaculture – an in-depth multi-media page on how enabling women to fully engage in and benefit from small-scale fisheries and aquaculture can reduce poverty and hunger in developing countries.

Videos

- Gender Equality: Now – A 3-minute animation looking at why gender equality is important in fisheries & aquaculture.
- Gender equity research at WorldFish – A three-minute interview with DG Dr. Blake Ratner discussing WorldFish's gender research.

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