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ENABLING AND CONSTRAINING FACTORS IN THE LIVELIHOODS OF POOR FISHERS IN WEST SUMATRA, INDONESIA

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Abstract: Despite a growing national economy and a raft of initiatives designed to improve livelihoods, 39% of fishers in West Sumatra are poor. In this paper, we present the results of interview-based research with stakeholders in 25 fishing communities in West Sumatra, Indonesia. Thirty-one enabling and constraining livelihood development factors are identified and classified according to the Sustainable Livelihoods Analysis. We recommend that these factors form a basis from which decision makers ensure that future livelihood improvement programs adequately recognize the integrated nature of poverty amongst poor fishers. Copyright © 2014 John Wiley & Sons, Ltd.

Keywords: small-scale fisheries; livelihoods; poverty; Indonesia; Sustainable Livelihoods Analysis (SLA)

1 INTRODUCTION

Understanding the factors that enable livelihood development and diversification is a crucial step towards improving coastal livelihoods (IMM, CFDO and CBNRM LI, 2005; IMM, 2008). These factors determine 'pathways out of poverty', and while they may share similar characteristics at the macro level, such as natural resource degradation and economic growth (see for example Barbier, 2010; Dasgupta, 2004; Dollar & Kraay, 2002; Fuwa, 2007), their precise nature depends on the economic, social, political, cultural and ecological context (Dasgupta, 2004; Krishna, 2006). In a diverse nation, such as Indonesia, poverty alleviation programs need to be 'tuned' to the regional context. Despite progress towards regional autonomy, many poverty alleviation and development programs in Indonesia are implemented by single government agencies without sufficient recognition of the factors that control livelihood diversification in a specific context (World

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Bank, 2012a). This creates a disjuncture between the design and implementation of programs and a high failure rate. As an archipelagic nation, Indonesia has a strong fisheries sector with more than 2 million fishers, most of whom are small-scale operators using traditional gear (Nikijuluw, 2002; FAO, 2009). Despite enormous potential for growth and prosperity (Anon, 2009), the small-scale fisheries sector, both in Indonesia and globally, is renowned as a stronghold of poverty (Macfadyen & Corcoran, 2002; Béné, 2003). Although Indonesia's economic growth has nurtured a decline in household poverty (World Bank, 2012a), there are still many vulnerable households who could drop back into poverty (World Bank, 2012b). In the province of West Sumatra, incidences of poverty amongst fishers continue to increase, and in 2011, 39% of all fishers were poor (Stanford, Wiryawan, Bengen, Febriamansyah, & Haluan, 2013). Yet between 2005 and 2009, 83 interventions and 10 billion Indonesian Rupiah were spent by the Department of Fisheries (DKP) to improve livelihoods and reduce poverty in fishing communities. In order to begin to address the root causes of failing programs in fishing communities and as a tool to support a multi-agency approach to poverty alleviation, in this paper, we identify locally determined factors that enable and constrain livelihood development for poor fishers in West Sumatra.

2 METHODS

Centers of poverty and fishing dependence were identified in the province of West Sumatra using 2008 poverty statistics (Badan Pusat Statistik (BPS), 2011). Initial interviews with DKP staff were followed by interviews with community leaders in fishing villages. Through a process of 'snowballing' (Cook & Crang, 1995), further interviews were conducted with other community leaders, poor and non-poor fishers, fisher's wives, fish sellers and processors, non-fishing community members and government employees in 25 fishing villages (Figure 1) in West Sumatra. These semi-structured interviews were conducted with individuals and small groups. The questions, coupled with participant observation, were designed to identify the following: (1) the current and historical livelihood portfolios of poor fishing households, (2) the livelihood opportunities and benefits in their context, (3) the perceived causes of poverty and (4) what 'pathways out of poverty' could look like.

Interviews were recorded, transcribed and translated. A three-stage iterative process (Miles & Huberman, 1994) was used to distil the enabling and constraining factors as follows:

(1) *Recurrence*. The factor was repeatedly raised by multiple respondents in different locations.
(2) *Triangulation* between different stakeholders. Because some of the causes of poverty raised by stakeholders touched on delicate aspects of culture and personal character (e.g. laziness and wastefulness), it was often useful to triangulate these through phrasing questions hypothetically or to discuss other members of the village as well as the individual household being interviewed.
(3) *Refinement*. Many highly context specific factors were identified through the interviews. Overlapping factors were synthesized into a generic factor. For example, in one specific village, a major issue was pollution from a palm oil factory; but in another, fishers bemoaned the loss of coral habitat. Both of these issues could be captured in the factor 'state of coastal natural resources'.

Where necessary, further clarification was obtained by contacting respondents by telephone.

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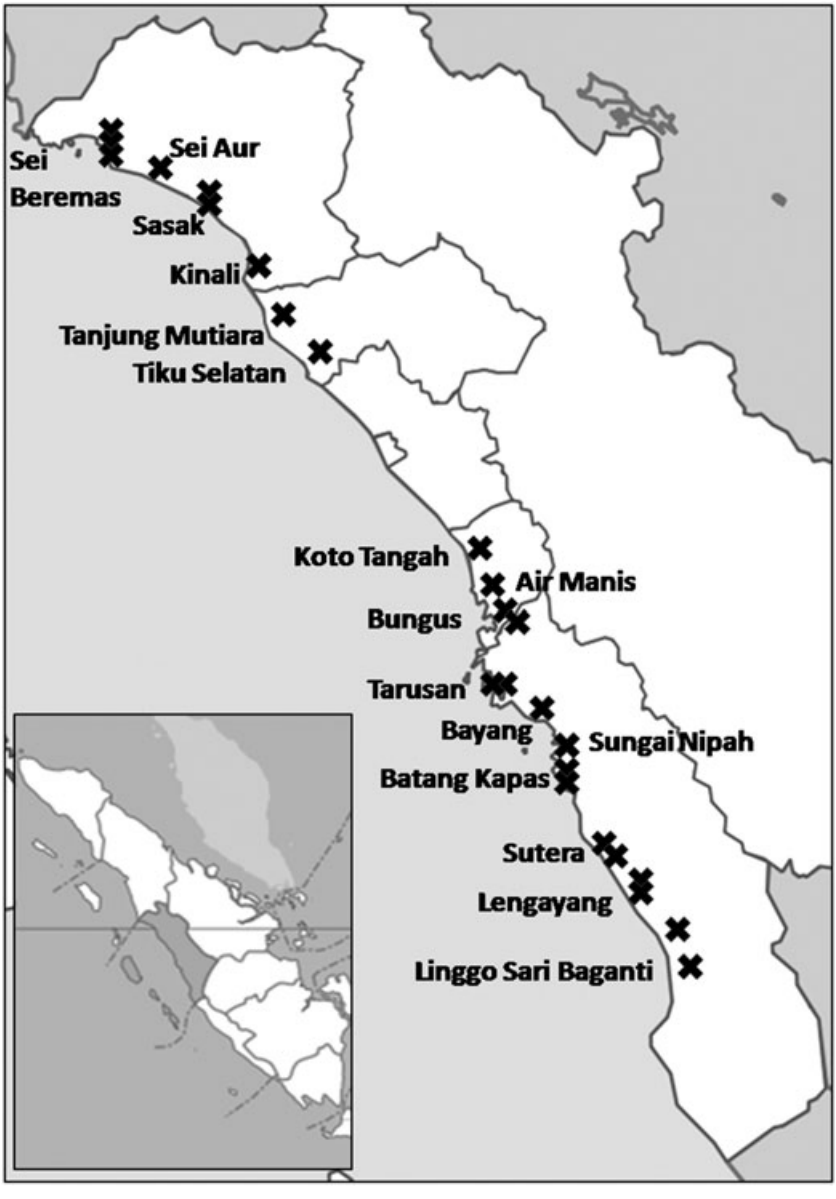

Figure 1. Field research locations in West Sumatra

3 RESULTS AND INTERPRETATION

Analysis of interviews from the 25 fishing communities identified 31 enabling and constraining livelihood factors (Tables 1–6). Factors relating to the context of a community ($n = 27$) were grouped according to the five asset categories of the Sustainable Livelihoods Analysis. Factors relating to implementation of programs ($n = 4$) were grouped in a sixth category, 'institutional support factors'.

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The five natural factors (Table 1) represent the interface between humans and the natural environment. Some communities faced greater natural barriers to prosperous, resilient livelihoods than others. Where communities were situated in sheltered bays with small islands, the fishers could fish in all weathers, had natural harbours to moor larger vessels, did not suffer from beach erosion and could access a diverse range of habitats (e.g. mangrove and coral reef) and alternative livelihoods (e.g. tourism and fish farming). Conversely, fishers from one exposed location frequently experienced rough weather when fishing was not possible, loss of homes because of beach erosion and unfertile land with poor irrigation. Although improvements to infrastructure (roads, communications, and harbour and storage facilities) can help isolated communities connect to markets, ideas and credit, some of these natural factors are permanent constraints that require mitigation.

There were more human factors ($n = 9$) than any other category (Table 2). Both interviews and field observations were identified varying attitudes and skill sets between

Table 1. Locally determined natural factors that enable/inhibit livelihood resilience in fishing-based livelihoods in West Sumatra

Natural factor	Explanation and quotations	Ideal conditions
Geographical isolation	Certain isolated communities lacked access to education, innovation, extension and physical capital such as ice, storage facilities and sealed roads. 'Until recently we did not have a sealed road to our district, this left us very far behind. We have a good road now but we are still trying to catch everywhere else up (GE).'	Well connected to markets, ideas and alternative livelihoods
Deep water harbour	Many fishing villages in West Sumatra are exposed to waves and lack shelter. Here, smaller boats are pulled on to the beach. 'There is a lack of fertile land here and few opportunities outside of fishing. But because the estuary here is too shallow for larger boats the fishing industry is limited (CL).'	A variety of fishing vessels can moor safely, giving access to offshore fishing grounds.
State of coastal resources	Declining catches is generally caused by habitat destruction coupled and overexploitation. 'Stocks have certainly depleted and one of the main causes is damage to the coral. We have so little understanding about how much exploitation the ecosystem can support and very few conservation zones (GE).'	Abundant and varied catch over the long-term, reflecting healthy habitats
State of land resources	Availability of productive land for agricultural alternatives (e.g. rice, livestock and rubber). 'I have fertile land but it is empty. Whatever I plant gets trampled by livestock. I don't have the money to build a fence or to get a land certificate so the land is just sat there (F).' 'My family were fishers but when I was younger I made the decision to buy land rather than a fishing boat. I am so glad I did because the land is now worth many fishing boats (CM).'	Fertile land owned and managed by the household
Natural processes threatening prosperity	Typically this is beach erosion and flooding. 'The estuary keeps on moving and more than 20 houses have been destroyed (CL).'	Safe and resilient livelihoods protected against natural disasters

F, fisher; GE, government employee; CL, community leader; CM, community member (non-fishing).

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Table 2. Locally determined human factors that enable/inhibit livelihood resilience in fishing based livelihoods in West Sumatra

Human factor	Explanation and quotations	Ideal conditions
Desire to save	Many of the poorest households live in a cycle of debt. 'We dig a hole and fill it in, dig another and fill it in, we never escape from our debts (FW).' Fishers living beyond their means during the 'good times' was identified as an important issue. 'Fishers waste so much money in the cafes. If they lived sensibly like farmers they wouldn't be so poor (GE).'	Daily saving income in readiness for the future
Market awareness	Some of the poor lack access to markets and take the price they get on the beach. 'The government must consider the whole industry, processors and fish sellers also need help. We need good facilities and access to markets and credit (FSP).' 'Some fish processors don't have enough capital to buy the fish so they "borrow" the fish, process them and return them to the seller. They are often exploited through this system (ijon) (GE).'	Choice of buyers and ready access to information enables fishers to achieve best price
Attitude to hard work/laziness	There are hard-working, industrious families and even communities where competition is fierce and a strong desire to get ahead. There are other more apathetic households and communities. 'In my community we are mostly independent boat owners who work hard, often fishing at night. In the next community they work as labourers. If one of those labourers marries into this community and tries fishing "our" why they just can't cope (CL).'	Hard-working and entrepreneurial, households believe that they can work towards a brighter future.
Occupational multiplicity: skills and motivation.	Some fishers have worked in other occupations and readily apply these skills during time off from fishing. Others lack the capacity or willingness to work outside of fishing. 'If you work as a crew member like me, you wouldn't have time for a side job, you have to focus (F).' 'There is lots of "sleeping land" here. Potentially productive land that is not being used because people lack the skills or experience to manage the land (CL).'	Highly motivated households with capacity to supplement income from fishing
Wives working	While a range of factors affect the ability of wives to supplement the household income (e.g. ages of children, availability of extended family and market) for many families, the wife working significantly boosted household incomes and helped children access higher education. 'The women here are spoilt. In other parts of Sumatra they want to work hard but here they just wait for their husbands to come back (CM).' 'We want to work but the land is not fertile and there are almost no other opportunities for us (FW).'	Wives, and extended families, have motivation and opportunities to contribute to household income.
Number of children	Many of the poorest households in the most isolated fishing villages had seven or more children. 'The three main issues for fishers in my district is that they 1) live	Family planning awareness and consideration given to long-term family health

	wastefully, 2) have too many children and 3) their wives don't work because they don't want to (CL).'	
Education: both the desire for higher education and the ability to access it	Several villages had limited access to secondary education. Prosperous families had the finances and connections to send children to school in other towns and cities. For many of the poorer households, there were few options besides fishing/farming. 'For most fishers getting their child through middle school is about the limit. More than that is difficult (CL).' 'My boat is damaged and needs to be repaired but my children need money for school. I paid the school fees but now have to work as a labourer until I can save money to repair my boat (F).'	Education encouraged and scholarship opportunities for those who need financial support for higher education
Long-term planning and preparation	Some of the poorest households felt that talking about the future was pointless. They lacked the finances and skills to change direction and were at the mercy of future events. 'We have no land and no other choice, we'll keep on going to sea like we do now (F).' Others had a more proactive perspective. 'I used to be a labourer but in 2006 became a security guard at the local school. My salary went down but my wife can sell snacks at the school and at least I'm not wearing my body out doing this (CM).' 'Fishing is only for the young. When my body grew tired of going to sea I became a fish seller instead (FSP).'	Planning and provision for the future of the family, especially when the main earner will not be strong enough to go to sea
Innovation, entrepreneurship and attitude to risk	Within close proximity, different families with the same basic livelihood profile could have very different attitudes to risk and entrepreneurship. While one family made decisions on the basis of potential returns, others adopted a more cautious approach of attempting to reduce losses. Often entrepreneurship was related to a broader experience of life outside of the immediate fishing community. 'There are those that want to take a risk and those that don't. If you are a crew member you don't take a risk, food is there, cigarettes are there. But if you are independent you need to know how you will pay the installments each month (F).'	Households are willing to innovate and take risks that will, if they succeed, increase livelihood resilience

F, fisher; FW, fishers' wife; GE, government employee; CL, community leader; FSP, fish seller/processor; CM, community member (non-fishing).

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villages and within villages, sometimes even between immediate neighbours. In some households, wives would wait for the husband to return with the proceeds from the catch sold on the beach and then live off that income while the husband slept or fixed nets and gear in preparation for the following day. In others, wives would take the fish to market to have a higher price or have another income entirely. The husband meanwhile would go to the rice fields, collect grass to feed his livestock or tend to fish ponds. Commonly, the reason given for this difference in attitude and skill sets was exposure to new ideas through travelling (*merantau*) or through parental influence. Several former crew who had since

Table 3. Locally determined physical factors that enable/inhibit livelihood resilience in fishing-based livelihoods in West Sumatra

Physical factor	Explanation and quotations	Ideal conditions
Fishing boat ownership	Boat ownership generally confers some degree of financial independence and the potential to accumulate capital. In several situations, poor households had previously owned a boat but had experienced illness or death and been forced to see the boat. 'If someone owns a small boat a net and a machine they could certainly not be called poor anymore (F).' 'I would love to own my own boat but as a crew member where would I get the money from to buy it? (F)'	High level of independency and/or a fair system of catch sharing
Fishing gear inadequate	In the face of declining stocks, several respondents wanted to fish further offshore but lacked the capacity. 'Along with rough weather a big problem here is that we do not have enough fishing gear. We can't even catch enough to supply the local village market (CL).' 'We need better technology like fish-finders and GPS because we're being left behind by bigger vessels (F).' 'We must give complete sets. Let's not just give nets to people who have no boats or machines (GE).'	Selective fishing gear targeting multiple species inshore and offshore
Quality control and processing	Limited ice, a lack of storage facilities and no adding value left many fishers unable to capitalize on gluts in supply as the price dropped sharply. 'We don't have enough ice here so that when there is a big harvest we can't store it and the price plummets (CL).' 'Here one of the owners of the fishing fleet also controls the ice and buys fish. He withholds ice from his competitors and buys their catch cheaply (GE).'	Local people get the maximum price possible for their fish
Housing and sanitation	While wealthier fishers sometimes intentionally choose to live in a simple wooden hut in order to be close to their fishing assets, many poor families identify housing and sanitation as key obstacles to their families thriving. 'The number 1 issue that fishers face is that some of their houses are not fit to be lived in. They need something better, with a certificate that would help them access credit (CL).'	Houses that contribute to a healthy household and a diverse livelihood portfolio
Presence or absence of a fish market	Fishermen want to sell their catch at auctions to a variety of buyers. In places lacking adequate competition, some fishers bemoaned that they did not have access to the best prices. 'If I get offered a good price on the beach then I take it. If I think I can do better in the fish market then I take it myself by motorbike to the auction (FW).'	Physical infrastructure that encourages the best price possible

F, fisher; FW, fishers' wife; GE, government employee; CL, community leader.

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Table 4. Locally determined financial factors that enable/inhibit livelihood resilience in fishing-based livelihoods in West Sumatra

Financial factor	Explanation and quotations	Ideal conditions
Ability to save	Few small-scale fishers have bank accounts, and when they save small cash reserves in the home, these are often raided in times of need by the wider family. For some who escaped poverty, the discipline of saving, especially on a restrictive budget, was an important factor in their increased prosperity. Households with a diverse livelihood portfolio were literally able to weather the storms that prevented the fishers going to the sea without needing to incur debt. 'We need to help people manage their finances better by having easy opportunities for saving schemes that encourage routine saving (GE).' 'Previously I found it impossible to save at home but now we can borrow larger sums from the fishing group, I save these in a bank account (F).' 'The key for crew members to be able to save is a supplementary income (CL).'	Regular savings or investments in livelihood diversification
Access to formal and informal sources of credit	Most formal credit lenders do not recognize fishing vessels as legitimate collateral for loans. Fishers lack advocacy, and it is difficult for individuals to access loans. 'I have been a crew member for 10 years now. My income is enough to live on but we can't save anything. I would love to own my own boat but without credit or any other skills what can I do? (F).'	Fishers can access credit through, for example, possession of a land certificate
Current savings	Savings in the form of cash, livestock or gold have the potential to provide a buffer in times of need. 'If people do save they tend to buy cows. Especially if you have lots of children it is very difficult to save. Most crew members here don't own land (F).'	Facing a shortfall of income or a 'shock', the household has a safety net.
Remittances	For young men to migrate in search of employment (*merantau*) is a common practice throughout West Sumatra. This can provide an important source of capital for isolated fishing villages. 'Most of our young people move away. They get better jobs in the cities and send money back (CL).'	The local economy is strengthened by an outside investment.

F, fisher; GE, government employee; CL, community leader.

become boat owners spoke about an understanding of saving regular small amounts that they had inherited from their parents. A number of government employees, including field extension officers, blamed the laziness and wastefulness of the fishers themselves for their poverty. In several locations when non-working wives were widowed, they were forced to take on work and their livelihood profile changed considerably.

Regarding physical factors (Table 3), fishers in every context wanted more and better infrastructure. People in isolated villages wanted sealed roads and ice, and larger communities wanted harbours and storage facilities. Most fishers wanted bigger boats and despite experiencing declining catches, found it difficult to accept that overexploitation of the stocks was happening and could accelerate with greater fishing

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Table 5. Locally determined social factors that enable/inhibit livelihood resilience in fishing-based livelihoods in West Sumatra

Social factor	Explanation and quotations	Ideal conditions
Community cohesion and trust	Although *gotong royong* (cooperation) is an important value in Indonesian culture, many respondents admitted to a breakdown of trust regarding group formation, projects and money. 'When it comes to money and government help we're all liars here. If we get the chance to make some money for ourselves we take it (F).' 'Fishers feel a strong sense of competition rather than cooperation. Groups are formed quickly when they know money is available but they quickly breakdown (GE).' Where groups were successful group members reported, 'we are one, we are working together for a better future (F)', and 'previously I was not able to access credit from a bank but being part of the group enables me to do this, I am much stronger as a group member and we must not let the group die (F).'	Groups seeking the common good of members and the wider community
Leadership	Good leadership of both communities and fishing groups requires transparency, honesty, equity and a commitment to serve the people. Sadly, corruption and nepotism were referred to by many respondents. 'When the government help (e.g. machines) arrives there is not enough to go around and it's always their (the leaders) friends who are helped not us (FW).' 'Now the leader is one of us, he goes to sea too and he understands us. It's his leadership that encourages the group and keeps it together (F).'	Proactive, fair leaders with vision to take the whole community/fishing group forward
Social structure and divisions	A community hierarchy is less evident in egalitarian West Sumatran culture as opposed to some parts of Indonesian where this is more pronounced. However, power relations between patron and clients, and specifically between locals and outsiders does lead to marginalization of certain groups of fishers. Migratory crew did not have access to the social capital of permanent residents. Typically, only permanent local residents were part of the fishing organizations. 'Many of the poor are newcomers. They live in simple huts on the beach but we must be careful not to make quick judgements. Some of them have houses and land back in their village! (CL).'	Inter-family equity between all sections of society
Justice and the rule of law	There was evidence of both the bright side and dark side of social capital. Unequal power relations meant that although wrongs had been committed (e.g. community property monopolized by an individual), people in certain communities felt scared to speak out for fear of disrupting social harmony and repercussions (e.g. witchcraft). 'We cannot talk openly about the group. The problem is that there are people of influence here. We are afraid to say everything because later on they will be angry with us (F).' 'We need clear rules and sanctions from the start of the fishing group. If someone steps out of line they need to have their group assets seized for the sake of the rest of the group carrying on (F).'	Misdemeanors are recognized and dealt with firmly but fairly in order to permit ongoing collaboration.

F, fisher; GE, government employee; CL, community leader; FW, fishers' wife.

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Table 6. Locally determined institutional support factors that enable/inhibit livelihood resilience in fishing-based livelihoods in West Sumatra

Institutional support factor	Explanation and quotations	Ideal conditions
Extension officer	Extension officers are a weak link in the development process. Poorly paid and frequently too closely involved in the power relations of communities, many lack capacity and commitment to overcoming coastal poverty. 'Some extension officers have been in an area too long and become part of the problem (GE).' 'We desperately need ongoing support. Don't just give us the money and run! (F and CL).'	Extension officers are motivated and proactive in the community, routinely visiting and journeying with poor families/groups.
Long-term support	Programs/projects are typically piecemeal and incoherent. They last for a few years, and then, there is a change of focus. 'Many years ago there was lady who came and taught us all how to sew but after a while she stopped coming (FW).' 'Programs are stopped before the poor have reached the point of being truly independent (GE).'	Continuity and coherence leading to long-term livelihood resilience
Capacity building and training	Programs predominantly tackle aspects of physical capital and are not built on solid human and social capital foundations. 'We're grateful for help in the form of nets, machines and fish boxes, but we really need programs that widen the work opportunities for people here (CL).' 'Fishers get given GPS but we are not taught how to use it and even the extension officer doesn't know! (CL).'	Human and social capital is developed, which enables sustainable outcomes when physical capital (e.g. boat machines) has worn out.
Advocacy and participation	There are few forums in which fishers can communicate their needs and aspirations to decision makers. Participation in the development process is often passive. 'When there are programs to help us many people never hear about them. We need a bridge between the department of fisheries and us (F).' 'We put in proposals for government aid and there are always small administrative reasons why it gets rejected. We need someone to help move our proposal up the pile (CL).'	Open lines of communication between the poor and decision makers ensure that development initiatives are tailored to the needs of the community.

F, fisher; GE, government employee; CL, community leader; FW, fishers' wife.

effort. For crew, fishing boat ownership was seen as a way to escape poverty. However, there were trade-offs between risk and returns and several examples of crew who had borrowed money and succeeded and others who had become bankrupt as a result. The fishers, community leaders and government employees were in agreement that helping labourers was especially difficult and that giving physical assets such as nets and engines to individuals that did not own a boat was a waste. They argued for complete sets of a boat plus equipment to be given to the fishers or the formation of cooperatives that could own larger vessels collaboratively. In locations affected by flooding, beach erosion

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andinward migration, adequate housing was the most important issue for the fishers. Unfortunately, there were several cases of new housing being built for the fishers in safe locations, but these were far from the sea, and the fishers had chosen not to live in them.

The financial factors (Table 4) were frequently the fishers' first response to what would make a better future. They complained that they did not have the collateral to borrow credit from formal institutions and that their income was so erratic, it was very difficult to save. Those that were successful savers often did so through alternative livelihoods such as livestock and crop farming. These complemented their daily sources of income and were particularly useful in times of need such as for health care costs, weddings and school fees.

The four social factors (Table 5) are crucial because it is the government policy to only provide aid to groups of fishers rather than individuals. Successful cooperation in fishing communities requires good leadership, trust, clear administration and ongoing institutional support. Many villages report a fishing group failure, often precipitated through a misuse of funds by the group leader. This is consistent with previous self-help group failure in Indonesia (UNEP, 2005). Even where successful fisher groups exist, this has not happened automatically but has needed an outside change agent either from the government or private sector. Despite fishers being able to work together to build boats and rescue friends at sea, there is an inherent individualism and competition amongst the fishers, which often prevents sustainable fisher organizations.

The institutional support factors (Table 6) identify a gap in communication between poor fishing households and government agencies. Although extension officers exist to bridge this gap, they are typically poorly paid and lack motivation. Furthermore, both they and office-based staff frequently come from a single sector background (e.g. fisheries) and are ill-equipped to tackle the breadth of the issues they face. Pre-program training and capacity building is often performed in the classroom rather than in the field, and programs are rarely community led. In one community, a former city bank employee had retired to his home with a commitment to help the fishers in his area. His leadership, administrative skills and network of contacts has unlocked funding and several initiatives for the local fishers. It is this kind of advocacy and support that is needed across the province.

4 CONCLUSION AND RECOMMENDATIONS

Globally, fisheries development has often prioritized capitalization to increase productivity which, it is hypothesized, will trickle down to improve welfare (Bailey & Jentoft, 1990; Dey *et al*., 2008). This focus on physical capital is evident in the livelihood improvement programs in West Sumatra, which emphasise physical assets such as nets, engines and fish boxes. The 31 enabling and constraining livelihood factors identified in this report demonstrate that livelihood improvement programs need to address natural, human and social factors, as well as physical and financial ones. The fishers themselves, while grateful for physical capital, are desperate for institutional support that will enable the formation and maintenance of sustainable fisher groups; assistance to fill in proposal forms to access government grants and land certification; advice on fertilizer and livestock; practical solutions for how to save money when income is intermittent; improved access to markets and innovation; training towards alternative livelihoods; education scholarships for children; and adequate housing, healthcare and sanitation. Many of these aspirations fall

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outside the remit of the DKP. We recommend that multiple government departments working together examine all these factors in order to establish, which are the binding constraints in each individual community, and to decide, in conjunction with the community, how to create an enabling environment for livelihood improvement. Specific further recommendations from this research are to:

(1) Develop measures that can quantify these factors to permit inter-community comparison.
(2) Create a more positive culture between government agencies and the poor. In many cases, the poor complained that the help they received was half-hearted, whereas the government employees protested that it was the fishers themselves that wasted the opportunities they were given.
(3) Because it is the government policy to give aid to groups rather than individuals, many of the non-boat-owning poor, who are not a member of a fishing group, are not eligible to be helped. Unless the scope of these groups is widened, and they receive improved ongoing support; many of the poor will continue to be marginalized.

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REFERENCES

Anon. 2009. *Investment Opportunities on Marine and Fisheries in Indonesia*. Ministry of Marine Affairs and Fisheries: Indonesia.

Badan Pusat Statistik (BPS). 2011. *Pendataan Program Perlindungan Sosial: Pedoman Pencacah*. Badan Pusat Statistik: Jakarta.

Bailey C, Jentoft S. 1990. Hard choices in fisheries development. *Marine Policy* **July**: 333–344.

Barbier EB. 2010. Poverty, development, and environment. *Environment and Development Economics* **15**: 635–660. DOI:10.1017/S1355770X1000032X

Béné C. 2003. When fishery rhymes with poverty, a first step beyond the old paradigm on poverty in small-scale fisheries. *World Development* **36**(1): 945–75. DOI: 10.1111/j.1467-7679.2010.00486.x

Cook I, Crang M. 1995. *Doing Ethnographies, Concepts and Techniques in Modern Geography*. No. 58. Institute of British Geographers: Norwich.

Dasgupta P. 2004. World poverty: causes and pathways. In *Accelerating Development*, Bourguignon F, Pleskovic B (eds). Annual World Bank Conference on Development Economics: Washington D.C.; 159–195.

Dey MM, Briones RM, Garcia YT, Nissapa A, Rodriguez UP, Talukder RK, Senaratne A, Omar IH, Koeshendrajana S, Khiem NT, Yew TS, Weimin M, Jayakody DS, Kumar P, Bhatta R, Haque MS, Rab MA, Chen OL, Luping L, Paraguas FJ. 2008. Strategies and options for increasing and sustaining fisheries and aquaculture production to benefit poorer households in Asia. WorldFish Center Studies and Reviews No. 1823. The WorldFish Center, Penang, Malaysia.

Dollar D, Kraay A. 2002. Growth is good for the poor. *Journal of Economic Growth* **7**: 195–225.

FAO. 2009. '*Report of the Global Conference on Small-scale Fisheries "Securing Sustainable Small-Scale Fisheries: Bringing Together Responsible Fisheries and Social Development*"'. Bangkok, 13-17 October 2008. Food and Agriculture Organization: Rome.

Fuwa N. 2007. Pathways out of rural poverty: a case study in socio-economic mobility in the rural Philippines. *Cambridge Journal of Economics* **31**: 123–144. DOI: 10.1093/cje/bel015

IMM. 2008. Systematic approaches to livelihoods enhancement and diversification: a review of global experiences. IUCN, Gland, Switzerland and Colombo, Sri Lanka; CORDIO, Kalmar, Sweden; and ICRAN, Cambridge, UK. 38 pp.

IMM, CFDO and CBNRM LI. 2005. Understanding the factors that support or inhibit livelihood diversification in coastal Cambodia. An output from DFID-funded research in Cambodia. IMM Ltd, Exeter, UK. 82pp.

Krishna A. 2006. Pathways out of and into poverty in 36 villages in Andhra Pradesh, India. *World Development* **34**(2): 271–288. DOI:10.1016/j.worlddev.2005.08.003

Macfadyen G, Corcoran E. 2002. Literature review of studies on poverty in fishing communities and of lessons learned in using the sustainable livelihoods approach in poverty alleviation strategies and projects, *FAO Fisheries Circular* No.979, FAO, Rome.

Miles MB, Huberman AM. 1994. *Qualitative Data Analysis: An Expanded Sourcebook*. Sage: Thousand Oaks, California.

Nikijuluw VPH. 2002. Small-scale fisheries management in Indonesia. In *Interactive Mechanisms for Small-scale Fisheries Management: Report of the Regional Consultation*, Seilert HEW (ed.). FAO Regional Office for Asia and the Pacific: Bangkok, Thailand; 42–47. RAP Publication 2002/10, 153 pp.

Stanford RJ, Wiryawan B, Bengen DB, 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. DOI:10.1016/j.ocecoaman.2013.08.010

UNEP. 2005. Indonesia: integrated assessment of the poverty reduction strategy paper; with a case study on sustainable fishery initiatives. UNEP Report.

World Bank. 2012a. Public expenditure review summary: social assistance program and public expenditure review. World Bank Report.

World Bank. 2012b. Targeting poor and vulnerable households in Indonesia. World Bank Report.

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