

Helping fishers make smarter decisions

RIU

Validated RNRRS Output.

Market information systems, often based on simple mobile phone and local-centre web access, help poorer groups make smarter decisions. Although market intelligence systems are widespread globally, they mostly serve large companies in developed countries. Flexible local networks connecting producers, traders, NGOs, the public sector and consumers help them quickly find and use the information they need. Artisanal fishers have rapidly caught on to using mobile phones to find out where they can get the best prices for their catch. 'One Stop Shops' in Bangladesh, and similar networks in Laos, Cambodia, and Vietnam, also offer fishers cheap local access to market information. These simple systems could have a major impact, particularly in countries where aquaculture is booming.

Project Ref: **AFGP07:**

Topic: **3. Improving Fishers Livelihoods: Better Fishing Management & Aquaculture**

Lead Organisation: **University of Stirling, UK**

Source: **Aquaculture & Fish Genetics Research Programme**

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Description

Research into Use

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Geographical regions included:

[Bangladesh](#), [Cambodia](#),
[India](#), [Lao PDR](#), [Thailand](#),
[Vietnam](#),

Target Audiences for this content:

[Fishers](#), [Processors](#),
[Traders](#),

AFGP07**A. Description of the research output(s)****1. Working title of output or cluster of outputs.**

In addition, you are free to suggest a shorter more imaginative working title/acronym of 20 words or less.

Developing market information systems for aquaculture to benefit the aquatic foods supply chain and improve supply and revenue potential for small scale producers in rural and peri-urban areas.

'Livelihood gains from informed aquaculture markets'

2. Name of relevant RNRRS Programme(s) commissioning supporting research and also indicate other funding sources, if applicable.

Aquaculture and Fish Genetics Research Programme

Activities were also connected with EU CA MASMANAP (1998-2000)

3. Provide relevant R numbers (and/or programme development/dissemination reference numbers covering supporting research) along with the institutional partners (with individual contact persons (if appropriate)) involved in the project activities. As with the question above, this is primarily to allow for the legacy of the RNRRS to be acknowledged during the RIUP activities.

R8286, R8287, T03, T08, T09

South Africa: University of Natal (R8287)

Nigeria: IOMR (R8287)

Vietnam: RIA 1 (R8286), Ministry of Fisheries & Mekong Development Institute (R8286), University of Can Tho (R8286), VASEP (T08)

Bangladesh: WorldFish Center (R8286)

Thailand: Kasetsart University (T09), Department of Fisheries (R8286)

India: CIFRI – West Bengal (R8286)

Egypt: WorldFish Center (R8287)

Tanzania: Fisheries Department (R8287)

Bangladesh: DANIDA Greater Noakhali Aquaculture Extension Project (T03)

Philippines: CIRAD (T03)

UK: University of Stirling (R8286, R8287, T03, T08), Fairtrade Foundation (T03)

4. Describe the RNRRS output or cluster of outputs being proposed and when was it produced? (max. 400 words).

This requires a clear and concise description of the output(s) and the problem the output(s) aimed to address.

Please incorporate and highlight (in bold) key words that would/could be used to select your output when held in a database.

AFGRP research has confirmed that though **aquaculture** production is growing in many developing countries, poor **information** access constrains its ability to deliver widespread economic and livelihood benefits. This information deficit impinges most particularly on those already disadvantaged – **small-scale producers** and supply networks in **rural** and **peri-urban** areas, and poorer consumers more generally. The steady supplementation and replacement of aquaculture product into **aquatic food markets** in domestic and international contexts also makes traditional information systems increasingly non-functional. Whilst **marketing** is widely recognised to improve welfare within aquatic food **value chains**, constraints on making good **marketing decisions** have been relatively overlooked.

Effective marketing requires values to be understood, created, communicated and delivered to consumers, whether in domestic or export markets, involving individuals or organisations. Good decisions, strategically or tactically require appropriate data within a **marketing information system (MIS)**, accessible and usable within the value chain. Though innovations in ICT (information/communications technology) are valuable in this, and already open access for many disadvantaged communities, the system need not be highly sophisticated, but simply effective in making connections in the value chain, reaching and empowering.

Our research has shown that data is omnipresent within aquaculture/aquatic marketing transactions, but seldom retained, and then only in basic formats such as aggregate volume and value. However processes can be set up, using simple connections through producers, market intermediaries, NGOs, public sector agencies, and consumers, to record and use meaningful quantitative and qualitative data to enhance information, thus market decisions and hence value. With improving physical and communications infrastructures, increasing aquaculture potential and changing market dynamics, small producers and marginal consumers alike can be fully included in the transaction system. Finally, better and more transparent sectoral information can support good policy development and effective governance.

The aim is to establish a system/service mechanism whereby information can be gathered and extracted from the value chain to deliver equitable benefit to participants. This can have domestic market focus – meeting urban food needs, be directed towards exports, or both. The approach is flexible according to needs, but is primarily based on a partnership between community organisations/NGOs, local knowledge agents (research and training), market intermediaries and retail/consumer representatives. Using simple data formats, communications methods (including mobile phone and local centre web access), action learning, community engagement, and capacity building, market information systems can be developed. These would contain embedded performance indicators, and be linked to wider development and policy processes.

5. What is the type of output(s) being described here?

Please tick one or more of the following options.

Product	Technology	Service	Process or Methodology	Policy	Other Please specify
X	X	X	X	X	

MISs encompass the entire commodity chain and look at links where information is lacking, then try to remedy the deficiency to gather better data to enable better marketing decision making. This can be achieved for example, by looking at the characteristics of products demanded by consumers; by identifying scope to upgrade the process

and/or technology at the farmers' level or further up the chain; to meet new legislations by modifying features or providing new and more adequate services to the stakeholders involved in the chain and by implementing new policies for increased transparency to enable traceability. The class of output as defined above would therefore depend on context.

6. *What is the main commodity (ies) upon which the output(s) focussed? Could this output be applied to other commodities, if so, please comment*

Aquaculture products – fish, shellfish, and aquatic plants are the primary focus, though this extends to links with captured (fisheries) sources. The concept is transferable to any other food commodity in these contexts and can be linked in broader regional and/or community empowerment initiatives.

7. *What production system(s) does/could the output(s) focus upon?
Please tick one or more of the following options. Leave blank if not applicable*

Semi-Arid	High potential	Hillsides	Forest-Agriculture	Peri-urban	Land water	Tropical moist forest	Cross-cutting
X	X		X	X	X		X

The key production systems will be land-water, peri-urban and high potential. However, these are cross-cutting, and the scope for delivery of benefits is critically dependent upon improved market information systems, in all systems where aquatic foods are produced.

8. *What farming system(s) does the output(s) focus upon?
Please tick one or more of the following options (see Annex B for definitions).
Leave blank if not applicable*

Smallholder rainfed humid	Irrigated	Wetland rice based	Smallholder rainfed highland	Smallholder rainfed dry/cold	Dualistic	Coastal artisanal fishing
X	X	X	X	X	X	X

All the systems identified have potential to supply products for aquatic food markets and thus MISs should be viewed as important and integral parts of the process which will enable them to make changes to adapt to constantly changing markets.

9. *How could value be added to the output or additional constraints faced by poor people addressed by clustering this output with research outputs from other sources (RNRRS and non RNRRS)? (max. 300 words).*

Please specify what other outputs your output(s) could be clustered. At this point you should make reference to the circulated list of RNRRS outputs for which proformas are currently being prepared.

For various reasons related to historical imbalances of power, market intelligence is unequally stored and shared throughout the value chain. Market knowledge can enable creation of value and thus also generates incentives

for individuals and organisations to confine sharing of information thereby retaining or building market power. Poor actors within the chain typically attempt to improve their position by expanding output to increase revenue. But such expansion often has had to be financed through credit, loans or divestment of ownership rights which may lead to only marginal improvements. The knowledge-based approach of the MIS enables poorer groups to make better use of an available resource, knowledge.

In the Post Harvest Fisheries Research Programme:

The 'Fish distribution from coastal communities - market and credit access issues' project has created an improved understanding of the trading and credit system, and poverty in coastal fishing communities, and developed a methodology integrating market and credit analysis techniques with a livelihoods approach. Its output "A guide to the analysis of fish marketing systems using a combination of sub-sector analysis and the sustainable livelihoods approach" combines horizontal (sub-sector) with vertical analysis (livelihoods), a potentially useful tool for aquaculture product commodity chains.

In the Natural Resources Systems Programme:

R8084 has developed a participatory market appraisal tool that could be used for aquaculture products.

Within the Crop Post Harvest Programme:

Several projects have developed market information tools (R7151, R7494, R8250 and R8422). Workings of commodity chains often bias the small producers who have little access to information, raising fair trade issues along the chain.

Other projects (R7168 and R7468) have developed tools for ethical trading. MIS could integrate relevant principles developed by these projects.

Validation

B. Validation of the research output(s)

10. How were the output(s) validated and who validated them?

Please provide brief description of method(s) used and consider application, replication, adaptation and/or adoption in the context of any partner organisation and user groups involved. In addressing the "who" component detail which group(s) did the validation e.g. end users, intermediary organisation, government department, aid organisation, private company etc... This section should also be used to detail, if applicable, to which social group, gender, income category the validation was applied and any increases in productivity observed during validation (max. 500 words).

Validation of MIS has in the broadest sense been undertaken by their uptake and continuing operation within markets. However, whilst MIS have been used within a number of organisations, those to which most have access tend to be at the macro scale of international markets and are thus funded by governmental organisations or inter-governmental agencies.

At the more local level MIS tend to operate within the confines of membership groupings and validation of such systems tends to be commercially confidential. Work with the AFGRP themes has shown that there is considerable latent demand for better market information, and has shown that where means become available (e.g. mobile phone access) people rapidly pick up their use and readily make decisions on the basis of better information.

The product aims to provide a more transparent system of market information and to enable wider access than has traditionally been the case. As such it has not been formally validated, but extends what is known about market structures and function, what can be done technically and organisationally, and how readily people in target contexts are seen to respond to such opportunities.

11. *Where and when* have the output(s) been validated?

Please indicate the places(s) and country(ies), any particular social group targeted and also indicate in which production system and farming system, using the options provided in questions 7 and 8 respectively, above (max 300 words).

The AFGRP work underlying this proforma has been primarily carried out in Bangladesh, India, Vietnam and Thailand between 2000 and 2005, though concepts behind it have also been fed in from sectoral market information experience in Europe, working with smaller communities to access larger market networks. The AFGRP work has likewise been targeted at smaller scale producers and local communities, particularly in marginal and impoverished conditions. In the case of Vietnam it was apparent that even quite large firms did not possess an especially good overview of the sector. Official data was often found to be of insufficient quality and there was no evident incentive in one organisation establishing a network sufficient to rectify the deficiency for the potential equal gain of others.

Current Situation

C. *Current situation*

12. *How and by whom* are the outputs currently being used? Please give a brief description (max. 250 words).

MIS in the aquatic sector are in general use but the format explored here is relatively novel. Apart from intergovernmental provisions such as FAO Globefish etc, some trade organisations in richer countries provide their own MIS. These exist at varied levels of sophistication with charges related to levels of service. MIS may also be provided within wider service provision (e.g. by trade associations), as one of a number of benefits, possibly with purchasable access for more specialist services.

The form here has only been used with other commodities for specialised purposes (e.g. Fairtrade development) but the AFGRP research has shown how simple networking approaches can be used to build market information effectively, and that producers, community agents and market intermediaries can benefit. The business model for

this can be developed further depending on the extent to which public and private goods are identified and funded, but typically an information service provider (e.g. telecoms) would link with NGOs, information centres, producer groups and key individuals.

13. *Where are the outputs currently being used? As with Question 11 please indicate place(s) and countries where the outputs are being used (max. 250 words).*

Existing MIS are in use globally and within most markets internationally, but are primarily based and used in developed countries. However, their use in the artisanal fisheries sector is emerging, sometimes linked with other forms of service provision – e.g. information, technical services, NGO community support. Systems such as 'One Stop Shops' – developed in Bangladesh (Noakhali) and in Laos, Cambodia, and Vietnam offer a basic model of inexpensive local access and the creation of specific information demands.

14. *What is the scale of current use? Indicating how quickly use was established and whether usage is still spreading (max 250 words).*

The concept of the MIS is well established although, as noted at 12, the variant here is a new product and thus is so far limited in its scale of use. However, the concept is strong, and once understood more widely, its potential benefits are expected to generate strong interest. This is particularly the case for countries with good aquaculture potential and/or strongly growing sectors, where social equity and benefits are key issues, and for countries building export markets, attempting to address increasing demands for product quality, traceability and other information needs.

15. *In your experience what programmes, platforms, policy, institutional structures exist that have assisted with the promotion and/or adoption of the output(s) proposed here and in terms of capacity strengthening what do you see as the key facts of success? (max 350 words).*

Existing MIS formats have received support from intergovernmental organisations. Governmental organisations and NGOs have also played supporting roles but typically at more localised levels focussing upon more limited generic goals. Trade associations and other private sector industry groupings within the captured and farmed fish sectors have also shown the potential for more specific and tailored benefits.

In the case of Vietnam, the formation of seafood exporters under the trade association VASEP enabled information exchange about target markets, whilst still affording the opportunity to compete as separate firms. Market communications were also facilitated through a common presence in overseas trade exhibitions, joint media profiles etc.

Structures providing a wide range of access points to all prospective interested parties are important if the organisation is to be seen as something other than a closed cartel open only to selected groupings. Transparency of the operations of the organisation also aids promotion and encourages membership.

Whatever the mechanism adopted to promote the MIS the common benefit has tended to revolve around the increased provision of data relevant to the perceived needs of its target users. However as ICT progress has increased, the potential range of information available to different user groups has widened. Access to better

quality data has become possible but subject to entry barriers which are often difficult for poorer channel members to overcome.

Promoting the provision and access to improved quality data would require a supporting infrastructure to enable appropriate checks on the control of data quality and accessibility. Access alone is insufficient. It must be accompanied by training relevant and apposite to the needs of the prospective user communities. The creation of networks and structures to support and develop MIS is seen as critical to ensure the development of the service and to maintain delivery consistent with changes in the market.

Current Promotion

D. Current promotion/uptake pathways

16. *Where is promotion currently taking place? Please indicate for each country specified detail what promotion is taking place, by whom and indicate the scale of current promotion (max 200 words).*

In the case of Vietnam members of VASEP have been able to gain improved quality data on export markets which has proven invaluable given the dramatic change in policy adopted by the USA, at the time their main target market for Pangasius catfish. By having access to good quality data it was possible to identify alternative markets for their exports.

Promotion of the role of MIS has been evident throughout the markets served by VASEP members. VASEP has established an international presence which as a trades association can present positive generic messages about its products and members' abilities to meet alternative needs.

At a more localised level, internal benefits have also been identified in the case of Bangladesh where market information systems have enabled small scale producers and other channel members to gain access to information such as prices, grade sizes and other species preferences. The benefits of participation have been promoted throughout the chain by demonstrating the positive impacts of such schemes e.g. improved prices.

Fairtrade certification is also a way to improve MIS, by grouping and empowering the producers and by installing a direct contact with the buyers, dealing with the producers in an ethical and transparent way. Fairtrade also provides a recognised medium through which producers can communicate with their target markets; its established presence within a number of product categories also facilitates incorporation of other new products, including potentially those from aquatic production systems.

17. *What are the current barriers preventing or slowing the adoption of the output(s)? Cover here institutional issues, those relating to policy, marketing, infrastructure, social exclusion etc. (max 200 words).*

Marketing data are commonly diffuse and disaggregated throughout the network of channels within the marketing environment. Data are often recorded only temporarily or not at all and may not be present in written formats, may be inaccessible or held within private records. Even where data can be tracked throughout the chain,

information can become ambiguous as raw materials are transformed and combined with product flows from dispersed points. Market information systems thus have to contend with the potential sources of error and corruption in the quality and accuracy of the data gathered whilst ensuring collection mechanisms are not unduly onerous to the point of discouraging participation.

Adoption of MIS is also dependent upon ensuring adequacy of access and flexibility in meeting prospective user needs. Different user groups are likely to have considerably different skills and resources at their disposal to interrogate the data.

Policy measures must ensure the availability and access to satisfy training needs of all potential user groups and that this can be provided in a way which is viable and valuable to all concerned. Experience with ICT has traditionally been a constraint but improved access and falling real costs may be expected to reduce barriers in future.

18. What changes are needed to remove/reduce these barriers to adoption? This section could be used to identify perceived capacity related issues (max 200 words).

The barrier of the dispersed nature of marketing data can be resolved or lessened through the provision of more systematic processes for collecting and storing data. Much of the difficulty has arisen traditionally from individuals perceiving themselves to be incapable of amassing the volume and quality of data required to make a meaningful difference to their marketing decisions. With appropriate collection mechanisms in place and improved access to ICT individuals can now play a more substantive role and gain insights to the bigger picture of their value chain.

Training in the awareness of the potential contributions of MIS is required and institutional capacity to deliver this is necessary. Training provision may be made in a number of different ways, whether this is as start-up programmes likely to be necessary in the initial years or as ongoing in-house components of career/ personal development plans.

Ultimately individuals within the value chains should develop a broader understanding of their relative position in relation to downstream and upstream actors and to appreciate how this awareness can enable more appropriate marketing actions. Once individuals recognise and experience the real gains that flow from such improved decision making the task of adoption should be lessened further.

19. What lessons have you learnt about the best ways to get the outputs used by the largest number of poor people? (max 300 words).

Price is usually the clearest signal sent within the market; accurately received despite the background noise of data. For poor people, even small improvements in price will have a large impact in relative terms. Real gains, even if small are usually the best way to generate adoption.

Impact of MIS can often best be shown in parallel comparisons of prices paid for comparable products, with and without a MIS. Case studies tracking price differential can support this.

Various levels of sophistication can be created for MIS and users should recognise the need for data appropriate

for their own needs and purpose, rather than a needlessly large collection of any information present. Training and demonstration of the principles of sufficiency and cost efficiency are important in delivering realistic goals.

MIS can also demonstrate and promote decisions to diversify into new products and markets as prospective entrants can make more informed assessments of the risks involved. As markets change within shorter timescales individuals have reduced time to take advantage of opportunities that appear. This can occur, for example, with producers contemplating a move from capture fisheries into aquaculture, or processors considering alternative techniques say from smoked fish processing into fresh.

As the MIS incorporates data from further a field and provides a mechanism to gain insights on otherwise less accessible targets, such as export markets, it can be critical in shaping marketing strategy and the evolution of a sector. The opportunity to link and integrate MIS with others becomes increasingly feasible as ICT costs fall.

The system should also be seen as a management tool which aids assessment of performance. Indicators such as market share, relative price levels etc. can be gathered and monitored over time to assess performance and the possible need for policy changes.

Impacts on Poverty

E. Impacts on poverty to date

20. Where have impact studies on poverty in relation to this output or cluster of outputs taken place? This should include any formal poverty impact studies (and it is appreciated that these will not be commonplace) and any less formal studies including any poverty mapping-type or monitoring work which allow for some analysis on impact on poverty to be made. Details of any cost-benefit analyses may also be detailed at this point. Please list studies here.

No specific poverty impact studies have been carried out, and potential impacts could only be inferred. However in Central Thailand, the AFGRP project (T09 and PAPUSSA) conducted semi-structured interviews of farmers followed by direct observation to determine potential impacts of better market information.

In Bangladesh, a baseline survey of a DANIDA project was carried out on freshwater prawn related to market options, and other studies assessed how small-scale farmers could compete related to existing MIS and marketing strategies for fish and prawn. In Vietnam (T08), a pilot MIS was set up and dully monitored for price and other data access, though poverty impact itself was not assessed.

In Africa, an AFGRP linked survey in Uganda, Cameroon and Malawi (R8287) analysed and characterised the fish supply chain in urban and peri-urban areas, thereby establishing bases whereby potential impacts of better information could be gauged.

21. Based on the evidence in the studies listed above, for each country detail how the poor have benefited from the application and/or adoption of the output(s) (max. 500 words):

- *What positive impacts on livelihoods have been recorded and over what time period have these impacts been observed? These impacts should be recorded against the capital assets (human, social, natural, physical and, financial) of the livelihoods framework;*
- *For whom i.e. which type of person (gender, poverty group (see glossary for definitions) has there been a positive impact;*
- *Indicate the number of people who have realised a positive impact on their livelihood;*
- *Using whatever appropriate indicator was used detail what was the average percentage increase recorded*

This research shows clearly that improving market information access is key to positive change in the sector. In Central Thailand increased market access due to better communication and infrastructure has stimulated significant uptake of aquaculture as a diversification activity, providing higher income than other traditional activities. The excellent marketing networks and consequent high awareness of the state of markets on the part of all stakeholders in this region create employment in the marketing of these products which is greater than that generated by aquatic production itself, and ensure a competitive situation in which producers have multiple options for sale whilst market values for fish products remain relatively low, leading to substantial benefit to lower income consumers.

In Vietnam, MISs enabled moderate and extreme poor people to develop better production and marketing strategies and make the best use of the agricultural labour force. In addition, they contributed to improving people's knowledge, especially the poor, by supporting capacity building. As a result, these positive impacts helped the poor to use their available natural resources more efficiently, thus enabling them to improve their livelihoods. MISs also increased gender equality in the poor communities. Also, due to getting useful technical information by MISs, the farmers are willing to invest capital for production, thus, land capacity has been significantly increased. MISs have impacted on all stakeholders in the commodity chain. 93.8% of total farm households in Vien An commune, Soc Trang province appreciated that the information received from MISs contributed a part into increase in paddy yield per hectare.

Fairtrade has been recognised to have a positive impact on the livelihoods of farmers involved in the certification scheme. If implemented in Bangladesh (Noakhali district) for the freshwater prawn, this could include more than 10,000 extreme poor farmers. Increased production and marketing of aquatic products in Bangladesh has had substantial positive livelihood impacts that include elevated daily wage rates due to increased demand in labour markets. Greater benefits are possible but are not currently realised because confusing and inconsistent practices in wholesale markets negatively impact the returns of small-scale traders.

In terms of the poverty groups impacted by MISs effects are wide ranging. Those employed in the marketing of aquatic products often fall into extreme vulnerable categories, opting to collect and sell products or work for larger operators engaged in these activities due to lack of access to productive land. In Bangladesh and elsewhere fishers have diversified into activities related to the sale and distribution of cultured aquatic products. Women are overwhelmingly involved in the processing of aquatic products and, in many countries, their distribution and sale through retail markets.

Environmental Impact

H. Environmental impact

24. What are the direct and indirect environmental benefits related to the output(s) and their outcome(s)? (max 300 words)

This could include direct benefits from the application of the technology or policy action with local governments or multinational agencies to create environmentally sound policies or programmes. Any supporting and appropriate evidence can be provided in the form of an annex.

MIS help the entire stakeholder involved in the commodity chain to get better access to information about production techniques and legislations.

Some initiatives like Fairtrade have an important environmental component in their standards. Clearly environmentally related attributes can be included in MIS and used to support and stimulate better environmental practice.

25. Are there any adverse environmental impacts related to the output(s) and their outcome(s)? (max 100 words)

Aquaculture might be seen by the poor as the best option to diversify and increase their income. This can lead to increased use of the water resources and a greater potential for pollution if systems are intensified. However, MIS will help to inform farmers that destructive practices are not recommended especially if products for export to international and more exigent markets.

26. Do the outputs increase the capacity of poor people to cope with the effects of climate change, reduce the risks of natural disasters and increase their resilience? (max 200 words)

If groups such as producers and marketing stakeholders are well informed by MISs their ability to adapt practices, act collectively, and offer support to one another in the face of shocks related to global warming and natural disasters is enhanced. Their resilience to these and other shocks and trends is therefore increased by such capacity strengthening measures.