2011 Discussion Paper 17

FUNCTIONS AND FORMS OF BROKERAGE IN THE MALAWI FISHERIES PLATFORM

ELIAS MADZUDZO

JUNE 2011

This document is an output from the Research Into Use Programme (RIU) funded by the UK's Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID.

FUNCTIONS AND FORMS OF INNOVATION BROKERAGE IN THE MALAWI FISHERIES PLATFORM

Elias Madzudzo[1]

Abstract
Making agricultural research relevant for development remains a challenge for development planning. The Research Into Use (RIU) programme has attempted to tackle this question and has identified the role of an innovation broker as key in creating a conducive environment to make better use of research, by building up networks of relevant actors. This paper examines the facilitation or brokering efforts of the RIU Malawi country programme in developing the fish farming sector of the country, specifically *chambo* fish production. *Chambo* is a major source of animal protein for the rural and urban poor in Malawi, but its production has been declining over the last 20 years. While it is too early to gauge the long-term impact of RIU initiatives in Malawi, this paper shows that the programme did not develop new technologies but facilitated a way of working together between private hatcheries, government departments and research organisations. According to the paper, flexibility in the roles performed by RIU Malawi allowed innovation to take place.

Key words: Innovation Brokers, Networks, Brokering, Functions, Arrangements, Policy, Innovation, Fisheries, Aquaculture, Malawi

JEL Codes: D85, N5, N57, O13, O19, O31, O32, O33, O55, Q12, Q13, Q16

RIU DISCUSSION PAPER SERIES

[1] Research Fellow, RIU, elias.madzudzo@researchintouse.com

TABLE OF CONTENTS

LIST OF ACRONYMS

ADiM	-	Aquaculture Development in Malawi
ASWAP	-	Agriculture Sector Wide Approach
CGIAR	-	Consultative Group on International Agricultural Research
CRT	-	Central Research Team, RIU
DFID	-	Department for International Development, UK
FAO	-	The United Nations Food and Agriculture Organization
GTZ	-	Deutsche Gesellschaft für Technische Zusammenarbeit, now called the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
IDRC	-	International Development Research Centre
IFFN	-	Innovative Fish Farmers Network
IFPRI	-	International Food Policy Research Institute
JICA	-	Japanese International Cooperation Agency
KIT	-	Royal Tropical Institute (Koninklijk Instituut voor de Tropen)
LINK	-	Learning INnovation Knowledge
MDGs	-	Millennium Development Goals
MGDS	-	Malawi Growth and Development Strategy
MoAFS	-	Ministry of Agriculture and Food Security, Malawi
NAC	-	National Aquaculture Centre
NGOs	-	Non-Governmental Organisations

NIC	-	National Innovation Coalition
PIAD	-	Presidential Initiative on Aquaculture Development
R&D	-	Research and Development
RIU	-	Research Into Use
S&T	-	Science and Technology
SADC	-	Southern African Development Community
UK	-	United Kingdom
UN	-	United Nations
USA	-	United States of America

1. INTRODUCTION

The task of making research outputs relevant for sustainable livelihoods and environmental management remains a challenge, especially for the developing world. Initiatives such as the Research Into Use Programme — funded by the UK's Department for International Development (DFID) — have tried to examine this challenge through the lens of its projects in Asia and country programmes in Sub-Saharan Africa, where the specter of poverty, as a cause for and effect of poor economic growth, is a major concern (World Bank, 2008).

In Malawi, for instance, 70 per cent of the population lives below the national poverty line (Ellis et al., 2003). Moreover, 90 per cent of the country's population lives in rural areas, and 70 percent of the entire population is employed in the agricultural sector (Mkandawire, 1990).

The challenge of mitigating poverty and engendering economic growth in developing countries such as Malawi is a major concern for international and national development planners. The agricultural sector is now being considered attractive for its *potential* multi-functionality in addressing poverty and spurring economic growth in countries that have a high rural population and a significant agricultural sector (World Bank, 2008).

The use of the adjective 'potential' in the preceding sentence is deliberate for two reasons: firstly, to emphasise that this multi-functionality is a capacity intrinsic but not necessarily spontaneous to the agriculture sector. More importantly, this capacity to be unleashed depends on certain catalysing or brokering processes and actors facilitating its release. Awareness of these qualifiers of the agricultural sector's potential is important in diagnosing those instances where expectation of some dynamism in, say, some technology is in vain. In Malawi, for instance, Worldfish Centre's successful development of improved strains of the staple table fish known locally as *chambo (oreochromis shiranus)* has stagnated at the piloting stage while the country's consumption of fish has declined significantly over the last 30 years

due to decreasing supplies (Kaunda, 2010). This situation — where the supply of a major source of animal protein for the urban and rural poor is dwindling while the technology that can speed up its production lies unutilised — sets out the general thrust and context of this paper, which explores ways of employing research results to enhance impact and examines, specifically, the nature of brokering in the RIU Malawi country programme towards this end.

The RIU country programme in Malawi is working on developing the aquaculture sector to address subsistence and commercial needs of producers. Specifically, the programme is coming up with strategies to improve the supply of *chambo* as a well-known livelihood source, especially for Malawi's poor. RIU's activities are being implemented against a backdrop defined by three important aspects:

- Firstly, the availability of technologies that address the breeding of *chambo* is not a problem — WorldFish Centre (a centre of the Consultative Group on International Agricultural Research, CGIAR) and the Malawi National Breeding Programme have developed a strain with 30 percent improved growth.
- Secondly, the reduction in fish landings is considered a national problem; for instance, the country's policy landscape comprises several government policy initiatives to tackle the issue, with the most significant being the Presidential Initiative on Aquaculture Development (PIAD) (an aquaculture development initiative launched by Malawi president Bingu wa Mutharika).
- Thirdly, there are some initiatives implemented by state agencies and NGOs to improve the fish supply, but these have tended to have minimum success — for instance, the Innovative Fish Farmers Network sponsored by the Japanese International Cooperation Agency (JICA).

Against this technical, institutional and policy backdrop what has been the RIU brokering strategy*?* This paper addresses this question by studying RIU Malawi country programme's

work on addressing the issue of fish shortages in the country. Specifically the paper addresses the following questions:

- What are the location and sector-specific innovation brokering arrangements?
- What decisions shape different brokering roles?
- How is brokerage affecting policy-making and implementation?

This paper is organised as follows: Section 2 provides a brief review of conceptual issues around the issue of innovation brokering. Of particular importance is the typology of brokers that has been identified, mainly from a study of specialised innovation brokers, which is used as a template to examine country programme activities. A discussion of RIU Malawi's brokering activities in practice is presented in Section 3, followed by an analysis of the data on the basis of the questions stated above in Section 4. Section 5 synthesises the crux of the argument and suggests avenues for further research within the ambit of innovation brokerage.

2. INNOVATION BROKERING IN PERSPECTIVE

It has been well established in the rural development and agriculture literature that innovation is not defined solely by inventions or technical outputs; rather, it emerges out of greater interaction among a diverse set of players (Biggs, 1990; Clarke, 2002; Sarewitz and Pielke, 2007; Katunga, 2007). For Sub-Saharan Africa it is now clear that previous strategies to improve African agriculture, based on a technology transfer approach, had excluded critical institutions and actors — thus creating contexts that negate the emergence of innovations (Farrington and Biggs, 1990; KIT, 2006). For instance Malawi experienced consecutive famines from the 1980s despite concerted efforts to distribute subsidised technology packs to the farmers. Studies in the late 1990s diagnosed that the poor performance of the agricultural sector was not because of a technological gap but resulted from weak linkages among key stakeholders. This realisation ultimately led to the formation of the Malawi Maize Productivity Taskforce in 1999, which was a technical and political platform that succeeded in increasing production by 67%. The success of this initiative emphasised that technology, *per se*, was not the key challenge facing the agricultural sector, but that coordination among key actors and processes was a determining factor. Also, for technology to be optimal it has to be embedded in other institutional processes.

In this view of innovation stakeholders with various skills — such as technical, organisational and political skills — come together to share and jointly learn, leading to innovation or better ways of addressing change (Sumberg, 2005). Additionally, and more importantly, innovation in this sense is associated with particular behavioural or attitudinal changes at the individual and collective levels. An example of a pro-innovation attitudinal change is that of embracing failure as part of the learning process and sharing this information with other parties (Horne, 2008). Innovation is, thus, characterised by genuine collaborative networks connecting research and knowledge bases with practice or research and development. Also, the stakeholders connected and the innovations developed are rooted in particular technological, social and ecological contexts (Horne, 2008). For agriculture, innovation implies ‘a chain of technologies, institutions

and policies that function as an efficient system of development institutions rather than disarticulated parts' (Rukuni et al., 1998: 1076). Successful systems are characterised by an institutional context that catalyses interactions, learning and knowledge flow between actors (Hall et al., 2003).

The learning and knowledge flows mentioned in the previous paragraph are not spontaneous, and can be encouraged or hindered by certain factors (Klerkx et al., 2010). Organisational habits and practices, mainly in but not limited to public sector organisations, may hamper interaction — for instance, as a result of aversion to outside influences or from a perspective of maintaining the status quo and with it deemed advantages. However, such organisational cultures are not suited for present day globalised knowledge-based economies, which are interconnected at different levels. In the absence of networks such organisations will lack the social capital that facilitates adaptation (Ruitenbeek and Cartier, 2001). From a policy perspective an actor with an appreciation of the strategic value of networking becomes critical in such circumstances and becomes a catalyst for innovation. Klerkx and Leeuwis (2008) identify this catalyst as an organisation or individual that plays an intermediary or brokering role — a 'go –between' among different actors' organisational boundaries. The broker has enough clout to catalyse disparate actors, such as individuals, organisations or collectives, who may not necessarily be predisposed to interacting because of the opportunity costs of networking to cooperate. The broker tacitly disrupts organisational behavior informed by inward-looking thinking — for example, a purist ethos in research organisations, which seeks to maintain scientific excellence by only associating with pure science actors, may frown upon interactions with 'non-scientific' groups such as rural communities or private business actors (Tesfaye et al., 2010; KIT, 2006; World Bank, 2008) — and replaces it with a culture that values networking. Innovation brokers in such instances help mobilise innovation by identifying opportunities that the current system undervalues and facilitates relationships between disparate parts of the system. Intermediation or brokering roles are, therefore, key in linking various nodes of the system and disrupting moribund strategies through new or improved ways of addressing changes in the environment.

Klerkx and Leeuwis (2008a,b) have identified some brokering roles (see list below). The list is a dossier of functions that actors as brokers can choose from. The actor who takes on a brokering role approaches different groups at an individual or systemic level (Ruitenbeek and Cartier, 2001; Klerkx and Leeuwis, 2008) depending on the broker's reading of the environment or situation and the demands of the goals to be accomplished. These goals comprise a wide portfolio of brokering roles that can be performed. Klerkx and Leeuwis (2008a,b) list a typology of roles of brokers (see below).

Typology of brokering roles

- Scanning and information processing
- Knowledge processing, scoping and filtering
- Gate keeping and knowledge brokering
- Knowledge testing and validation
- Knowledge commercialisation
- Foresight and diagnostic work
- Advisory services
- Monitoring, learning and evaluation
- Providing information about potential collaborators
- Brokering a transaction between two or more parties
- Acting as a mediator or go-between actors already interacting
- Helping find support (political or financial)
- Management of interfaces
- Building and organising innovation systems
- Providing a platform for learning and experimenting
- Infrastructure for strategic intelligence
- Stimulating demand articulation
- Strategy and vision development

Source: Klerkx and Leeuwis (2008a&b)

Although brokering functions listed above are exhaustive and detailed, it must be noted that no typology can deal with the myriad contexts in agricultural chains (Ruitenbeeck and Cartier, 2001). Such a list also does not capture the role of different constituencies in ultimately determining the ways in which such functions are performed. This possibility of diversity and nuances in the manner in which the brokering task reveals itself in practice points to the burden

of this paper. There is a need for a complete understanding of brokering that goes beyond generic models and examines how it is embedded in social-historical, organisational and policy contexts. The next section addresses this issue by examining case studies of brokering initiatives coordinated by the Malawi Research into Use (RIU) country programme in strategies to improve fish farming among the rural poor.

3. EMBEDDING NETWORKING IN EXISTING POLICY LANDSCAPES: THE MALAWI COUNTRY PROGRAMME BROKERING ACTIVITIES

Situating the Problem

The fisheries sector is very important to Malawi's economy and overall food security, although production has declined sharply over the years. Fish farming has a long history in Malawi, dating back to the colonial period, but its significance in terms of providing livelihood options for the country's poor is a much more recent phenomenon, thanks to concerted efforts by civil society organisations. Fish farming now contributes to food, nutrition and income securities of poor households in rural areas in Malawi.

Table 1 below summarises the history of the fish sector in Malawi over the years by noting key developments.

Table 1. Episodic History of the Fish Sector in Malawi

Timeline	History
1906 **1957** **1970-1980** **1975-1980** **2000**	• Beginning of fish farming, especially trout, in Malawi — mainly as a result of colonial government research interests • Establishment of the Domasi Experimental Fish Farm focusing on tilapias, but with no mechanism to reach the general population • The aquaculture sector gets support from NGOs and as a result there is increased adoption of fish farming. The fish farming factors in many NGO activities, including that of CARE, World Vision, Card, Compass, Concern Worldwide, Oxfam, Peace Corp, Christian Service Commission. However, each works in isolation • The fisheries sector increasingly considered as contributing to the economy, food and nutrition security (providing 60% animal protein intake and 40% of general protein intake), employment, income and supporting an integrated aquaculture and agriculture strategy • Decline in fish harvests even as the government identifies aquaculture as a priority area. Imports from South Africa, Tanzania and Zimbabwe make up for the shortfall in domestic production. • **A** pluralistic system of governance becoming institutionalised in the Malawian political landscape; for instance, the National Fisheries and Aquaculture Policy's strategy on research promotes

2007	demand-driven, service-oriented research and seeks the involvement of stakeholders in prioritising research areas, etc. (Donda and Njaya, 2007) • National Aquaculture Centre (NAC) has research personnel and infrastructure but lacks the capacity to engage the private sector or to make NGOs work collectively in aquaculture development **(**Njaya and Chimatiro, 1999) • Presidential Initiative on Aquaculture Development (PIAD) is set up but without a clear framework for moving the fish sector forward

Table 1 above highlights the fact that aquaculture was promoted among the poor by NGOs rather than the state, and is significant to this paper's study of brokering. However, each of the NGOs concerned with promoting fish farming over the years pursued its own objective independent of the others and also had tenuous links to the state fisheries development agencies.

Another key point that emerges from the data above is that the Malawi government's involvement in the sector has changed over time. During the colonial period the research agenda determined the scope of the government's involvement. In the post-colonial era the government was actively involved in the fish sector but with minimum participation of other stakeholders; it has been noted that at this point government initiatives failed to attract the private sector (Njaya and Chimatiro, 1999). However, in recent years the political landscape has become more open and pluralistic, changing the way the state is managing the sector. Increasingly policy-makers are becoming more inclusive, taking note of the concerns of various stakeholders in the fisheries sector, against a larger backdrop of declining fish stocks and increasing imports.

In 2008 the RIU Malawi Country Programme, together with the Malawian Ministry of Agriculture and Food Security (MoAFS), coordinated a meeting of experts to identify the areas that a research-into-use programme could focus on. The developmental challenge that this

meeting addressed was that of low agricultural productivity in Africa, and Malawi in particular, and the topics considered did not reflect current investments in research and the stock of knowledge at hand. The theme of the meeting was how to make better use of research outputs and ensure their impact on intended beneficiaries. Although a diverse group of entities gathered at the meeting, the one thing they all agreed on was that there was a disconnect between research technologies and developmental impact. Those invited to the meeting — which later grew to become the National Innovation Coalition (NIC)[2] — included various interest groups, including input suppliers, financial organisations, farmer organisations, NGOs, government extension department officials and research organisations.

The NIC helped RIU Malawi identify key areas within the agricultural sector that suffered from the absence of any public or private initiative to address certain challenges — for example, the coalition made an informed decision not to duplicate efforts of the state's Agriculture Sector Wide Approach (ASWAP) programme that addressed a number of areas on food security, risk management, agribusiness and market development and sustainable soil and water management. Initially it identified seven areas for RIU to focus its efforts on, with fish farming being one of them[3]. Incidentally this coincided with JICA withdrawing funding from the Presidential Initiative on Aquaculture Development (PIAD), a critical policy arena, leaving it languishing for a bit without resources or attention.

At the time the fish farming innovation platform was being debated, fish production and quality in Malawi was declining; annual per capita consumption had declined from 13 kg per person in 1980 to 5 kg per person in 2005 (Government of Malawi, 2007). This reduced consumption was attributed to declining fish stocks in the main water bodies of Lakes Malawi, Chilwa and Malombe and the Shire River, compounded by a general lack of interest in aquaculture. An

[2] This and subsequent meetings on the same theme of improving agricultural productivity ultimately led to the creation of the National Innovation Coalition (NIC), a body of interested stakeholders that plays an advisory role for RIU Malawi and helps identify key areas for RIU activity in Malawi. The coalition, which started out with 20 members and now comprises 17, The director of extension services from the Ministry of Agriculture and Food Security was an early member of the coalition and is now a champion of RIU Malawi's activities.

[3] In 2008 the seven sectors identified for RIU attention were whittled down to four following a mid-term project review (Dijkman, 2010). The key innovation platforms that remained in the Malawi Country Programme portfolio were: Livestock, Cotton, Legume and Fisheries.

Aquaculture Development in Malawi (ADiM) survey of 2005 (supported by JICA) noted that there was a general interest in aquaculture as a livelihood source among smallholders, considering the market opportunity and prices table fish could command. However, production challenges — access to feed, water, etc. — tended to keep many farmers out of aquaculture and some pond owners were dropping out. Respondents in the survey cited poor yields due to stunting, pond size limitations and also inadequate technical back-up (ADiM, 2005). Two paradoxes characterised the poorly-developed aquaculture sector in Malawi: firstly, while a market opportunity for fish existed entrants failed to take advantage of it. Secondly, according to platform champion Daniel Jamu of the CGIAR's Worldfish Centre, improved strains of *chambo* or tilapia were available as a result of a painstaking selective breeding research programme. Yet the majority of fish farmers used inferior breeds (RIU, 2010). RIU's diagnosis of the situation was that this dismal state of aquaculture in Malawi did not suggest an absence of initiatives. On the contrary, entities such as World Vision, US Peace Corps and JICA, among others, had been implementing aquaculture programmes in the country. The major problem, however, was that most of the initiatives were done in isolation from other relevant players, thus failing to benefit from synergies of different resources.

Composing A Network

Following the identification of fish farming as an area of focus RIU convened a meeting of stakeholders in the fish value chain to form a fish farming platform (see Table 2). A layered but dynamic system of platform coordination emerged, with the National Innovation Coalition as the apex body on one end, the platform champion on the other and the RIU office situated in the centre. The champion here is identified as the leader of the platform who coordinates all platform activities — for instance, representing the platform in the NIC, acting as the link person with the RIU office and following up on platform activities (for example, keeping track of beneficiaries' progress in repaying their hatchery improvement loans). The RIU country programme provides all funding for platform activities. It also approves and is accountable for any payments made to the platform and to the NIC. Implicit in this role is a perception of RIU as the *de facto* project leader. In some circles it is perceived as a donor agency and sometimes as

the secretariat of the RIU project in general[4]. The programme office also keeps a non-intrusive check on the platform — for instance, checking on the progress of infrastructure development activities — and organises and facilitates platform meetings and provides secretarial services. The RIU office also takes an active role in identifying, recruiting and facilitating the integration of new entrants into the platform, such as the Innovative Fish Farming Network (IFFN) — a nationwide grassroots organisation that seeks to promote a commercial orientation among fish farmers. IFFN had slid into dormancy after funding from its donor JICA had dried up. After the initial process of reviving IFFN's structure, its final merging into the platform was left up to a taskforce. The country programme is also responsible for producing press reports for newspapers and radio stations about the activities of the platform and journalists are invited to cover RIU activities.

Table 2. Fish Farming Platform Membership

Primary Partners	
Champion	Dr. Daniel Jamu, Scientist, WorldFish Centre
Private Sector	• Maldeco Aquaculture limited • Private Hatcheries • Opportunity International Bank of Malawi • Private Large Scale Fish Farms
Public Sector	• National Aquaculture Centre (Government) • National Agricultural Extension service • Fish Farming Department
Research	• WorldFish Centre • National Aquatic Research Centre • Bunda University of Agriculture
Civil Society	• World Vision • Fish Farming Associations • Project Concern International

[4] However to some partners like the Cotton Platform, the RIU is seen chiefly as a body with resources to promote multi-stakeholder networking approach to innovation management.

Embedding Into The Existing Policy Space

At the very outset the RIU fish farming initiative found itself in a policy environment inundated with initiatives to address declining yields (60% decline over the years) in the country's fish stocks. Some of these initiatives are listed below:.

- The Malawi Growth and Development Strategy (MGDS); instruments and tools to increase contribution of the fisheries sector to economic and social development
- The 2001 National Fisheries and Aquaculture Policy
- The 2005 National Aquaculture Strategic Plan
- The Fisheries Conservation and Management Act
- The 2002-2015 *Chambo* Restoration Strategy
- The 2006 Presidential Initiative on Aquaculture Development (PIAD)

Most of these initiatives were anchored in the country's wider obligations to protocols it is a member of — such as the Southern African Development Community (SADC) — party to e.g. SADC or to its donors — such as the JICA through the Innovative Fish Farmers Network. However, most of these initiatives have been criticised as being donor-driven, with no clear plan to engage the private sector, or for being limited in scope in terms of transforming ideas into action.

The RIU fish platform embedded itself in this policy space by focusing on the multiplication and dissemination of improved varieties of *chambo.* The platform champion laid out the current state of the fisheries sector in Malawi to the group at the first meeting. Key in his presentation was the mismatch between demand and supply of fish in Malawi and ways to increase production to meet demand. The platform decided to primarily narrow this shortfall in the supply of fish through two ways: using improved strains with faster growth rates and making these improved strains easily available to farmers. The platform helped those farmers with hatcheries — but who faced challenges in producing fingerlings — to apply for loans from RIU and improve their farms. Four established hatchery owners and two smallholder farmers were

selected for fingerling production. Once the platform approved the fingerling producers RIU disbursed the funds to them.

Addressing Supply And Demand Side Dynamics

Until 2008 farmers interested in accessing improved varieties had to travel to the former capital city of Zomba in southern Malawi, where the National Aquaculture Centre is located. Zomba is 400 kms from Mangochi in the centre of the country and 800 kms from Mzuzu in the north. Farmers located far away from Zomba were reluctant to travel these long distances only to risk losing fingerlings on the way back. Thus, the beneficiaries of these tended to be companies and individuals who produced fish commercially and aimed for markets outside Malawi. The RIU platform resolved to address this constraint by establishing improved fingerling hatcheries in different parts of the country.

Four existing hatcheries that were members of the platform — Mandevu, Solace, Africa Novel Resources and the National Aquaculture Centre (NAC) — opted to take up the challenge of multiplying improved breeds of *chambo*. The platform then submitted a proposal to RIU to fund the hatcheries. RIU referred the proposal to the NIC, which recommended that funds be disbursed as a loan for a revolving fund at the platform level. Once the platform agreed that its focus would be on rolling out improved species of *chambo* to farmers, it then had to develop strategies for how brood stock could be accessed from the National Agricultural Research Council and distributed to producers located in various parts of the country.

Enhancing Innovation Capacity

Maldeco, a subsidiary of the conglomerate Press Trust Group in Malawi, is a key player in the fish farming sector in southern Africa, with wide-ranging resources, skills and networks along the entire fish value chain. When the fish farming platform was established Maldeco's absence from it was glaring. The platform champion and the RIU country coordinator visited the general manager of the company in the town of Mangochi. The pair made a presentation on RIU and the fish farming platform, outlining platform activities and pointing out that Maldeco's absence

from the platform was a major gap given that it was a key private sector actor in Malawi and the region. According to accounts the general manager was surprised at the scope and achievements of the RIU platform and confessed that he had been dismissive of platform invitations to meetings because he thought it was just another government meeting. He said he was still apprehensive about the role of the government in the platform because he felt it introduced unnecessary red tape. He illustrated his point by citing Maldeco's application for a permit to undertake sex change programmes in its fisheries, which was still awaiting government approval. The platform champion encouraged the general manager to bring such issues to the platform. Later, the champion followed up the sex change issue with the state and Maldeco was soon granted a permit. Since then the company has become a committed member of the fish farming platform.

Maldeco's presence has proven invaluable to the operations and image of the platform at present and into the future. Its vast experience in fishing, breeding, processing, marketing at both domestic and international levels, and fish feed development is, at least in theory, now at the disposal of the platform. This is particularly important considering the long-term vision of the fish platform to promote the commercial production of fish in the country for local consumption and export. Maldeco's presence is expected enhance the innovation capacity of the platform.

Through RIU financial support and facilitation of meetings the platform has also begun reviving the Innovative Fish Farmers Network (IFFN). Originally formed and supported by JICA, IFFN was a national body for fish farming whose primary role was the promotion of commercial fish production by smallholders. However, the activities of the network came to an end when donor funding ended. RIU viewed IFFN as a potential valuable member of the platform, given its nationwide grassroots base of producers and its commercial focus. Regional meetings to revise the IFFN structures have been held, with the platform facilitating and RIU providing the funding and some backstopping. The presence of IFFN is expected to add value to the platform because

it brings its experiences with and concerns of producers to the table. Furthermore, its presence presents an opportunity to connect science producers with end consumers.

Beyond Research Products

Apart from its focus on multiplication of improved fingerlings of *chambo* the RIU country programme is also lobbying policy-makers on behalf of the platform. For instance Maldeco only became a keen platform member after it was able to leverage a breakthrough and earning a permit for its sex reversal programme. The company had previously failed to get government approval on hormonal use until the platform champion took it up with the state authorities. The Maldeco case has revealed that membership, particularly for the private sector, is not solely about access to technology matters, but also about creating policy space for its activities. In other cases the platform has been asked to approach the government and request relief on import duties for fishing gear, refrigeration equipment, etc.

In another instance another platform member, Bunda University of Agriculture, used RIU's networking ideas to develop its own project on "Enhancing Fish Production and Marketing for Food Security and Rural Income of Small-Scale Producers in Malawi". Its association with the fish platform has also provided fodder for introspection and critique of its own habits towards the production of technologies; for example, in its proposal to the Regional Universities Forum Bunda University said it had thus far barely supported development processes and links with other actors for long-term engagement with communities (Kaunda, 2010). It then went on to develop a programme to address technical and institutional challenges to pond aquaculture. A key element of this project is an approach to create a forum of stakeholders along the value chain in order to leverage adoption of improved varieties of *oreochromis shiranus.* The university has asked RIU to help in linking fish producers to other stakeholders along the value chain.

Brokering Second Order Challenges: Demand Articulation

A major concern among fish farmers is the high cost of fish feed. Maldeco and another company, Proto Feeds, produce fish feed for the market but farmers have complained about high costs. Through the platform RIU has set up a taskforce comprising the Bunda University of Agriculture, the National Aquaculture Research Centre, and two NGOs to explore possibilities for using local products to produce feed. At the time of writing this paper the taskforce had just begun meeting.

Addressing Asymmetry

Maldeco has been the key commercial producer on the platform. At the other extreme are smallholder fish farmers. RIU has attempted to address asymmetry issues in the sector by bringing both extremes of producers to the table and giving them equal opportunities to voice their concerns and address their problems through the innovation platform.

4. DISCUSSION: THE NATURE OF BROKERING IN RIU MALAWI

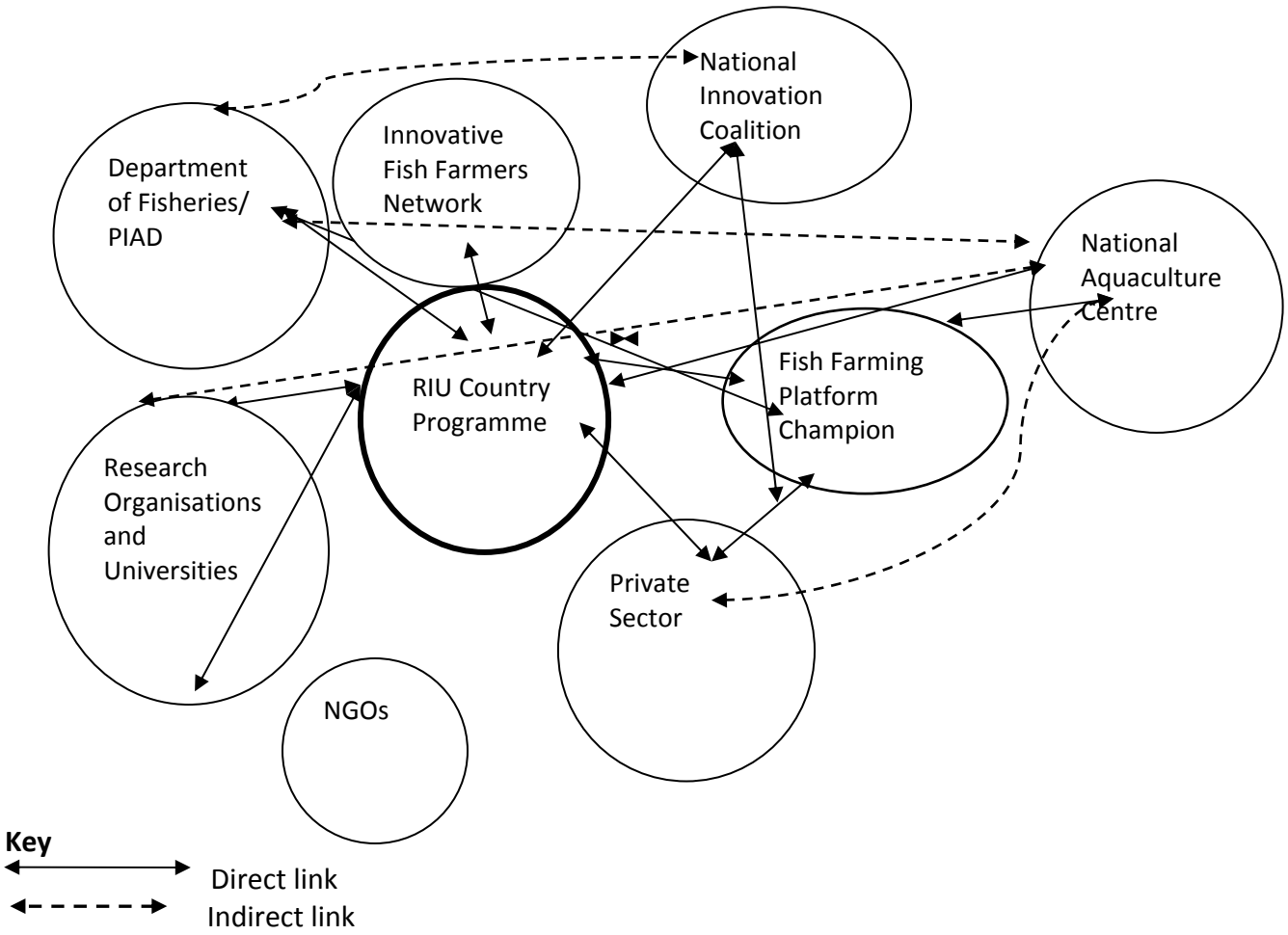
This paper started off by presenting the technical, institutional and policy context for the innovation landscape in the Malawi fish sector. In brief the background presented a typically weak innovation landscape — characterised by the paradox of declining availability of the staple table fish *chambo* against abundant but underutilised technologies that could reverse the decline and compounded by a policy environment inundated with several initiatives but no effective strategies on the ground. This is the context against which this paper sought to understand what strategies the Malawi RIU country programme adopted to promote fish farming. This broad question was addressed through a series of sub-questions that we now revisit in the light of the evidence presented in this paper.

What are the location and sector-specific innovation brokering arrangements?

Figure 1 on the next page is a summary of the resulting networks from RIU activities in Malawi. It is important to preface this summary by pointing out that the RIU fish farming programme started off from the view of enhancing the production of seed fish or fingerlings. The nature of brokering, therefore, has to be understood in the context of this production objective. The country programme has managed to connect together key stakeholders in the fish value chain. The platform is a dynamic entity whose form changes as its functions evolve. At this stage of the platform development most of the connections are anchored in the country programme office and the fish farming platform champion. The fact that the country programme office is also the funding vehicle for all programme activities helps to explain why all stakeholders are linked with it. However, the platform champion is a key node between RIU and the stakeholders. For instance, those members applying for funding for fingerling production apply through the champion. It is assumed that after infrastructure development for the fingerling breeding phase is over, and funding from RIU ceases at the end of the programme, there will still be a strengthening of other relationships that have, up until now, been largely indirect. A major lesson that can be drawn from Figure 1 is that brokering functions in orchestrated

programmes tend to follow the contours of the process that brought them into existence. In this case the source of funding housed in the country programme office, and the state's prominent role, has shaped the nature of RIU activities.

Figure 1: The Nature of Linkages in the Fish Platform



Note: Double-headed arrows relate to flows of information and not necessarily equality

To summarise, RIU did not bring about any new technology but introduced a new way of making the technology available, by developing networks among different stakeholders in the fish chain. These networks were developed and managed through a continuum of brokering strategies. The brokering strategies ranged from a big initial meeting with many-to-many interactions later being refined to the country programme coordinator engaging in one-to-one meetings.

What decisions shape different brokering roles?

The fish farming platform comprises two major nodes: the RIU country programme office and the innovation platform champion. In some cases the country programme office took the lead in facilitating an activity while in other instances it was the platform champion. For instance, in the case of the revival of the Innovative Fish Farming Network the country programme facilitated the initial meetings and, thereafter, left the organisation of meetings and the final integration of IFFN into the fish farming platform to the platform champion. Given its control over financial resources and its clout in government circles the RIU office usually takes charge of the initiation process and leaves the implementation of day-to-day activities to the platform. A system of levels exists where the platform is the primary broker and the RIU office is the secondary broker. However, in other instances the country programme office assumes the role of primary broker.

These dynamic brokering arrangements can be attributed to two major reasons: the order of challenges that the project sought to address and the path dependence from earlier phases of the RIU project. The fish platform identified production of fingerlings as the major challenge that needed to be addressed. Fingerling production implied infrastructure development, which in turn demanded the participation of the country programme as fund manager. Thus, an increased presence of the country programme became inevitable.

How is brokering affecting policy-making and implementation?

RIU brokering has affected policy through mediating between actors who are already interacting, albeit with poor linkages, and providing space for specific interests to access policy-makers. To understand how the country programme operates within the policy arena we need to note that while the innovation initiatives in Malawi are orchestrated, they are also, in the policy arena, opportunity-driven. Policy-makers in Malawi were aware of the crisis within the fish sector and had already identified aquaculture as a solution. The RIU programme thus landed in a terrain where a policy position had been taken.

The fish farming platform was also able to respond to requests from those members interested in exports for fingerling production guidelines. With the support of the country programme guidelines were produced and submitted to the government for ratification. While the production of such guidelines would tend to be the responsibility of the government, mandated to ensure quality control through legislation, the fish platform was able to facilitate this activity and bring in the government for ratification without ruffling any feathers.

Similarly, the platform has afforded the private sector access to policy-makers to address specific issues. A case in point is Maldeco's request for a permit to use hormones to effect sex reversals in fish, which had been held up in government bureaucracy. As a result of the lobbying efforts of the platform champion and the RIU coordinator the government soon sanctioned this request.

The art of making choices

At face value it may appear that the RIU brokering process has been hijacked by the elite. For instance, Maldeco joined the platform ostensibly to get assistance in acquiring a sex change permit. This begs the question whether the company would still participate in other platform activities. Also, in the case of fingering multiplication activities mentioned above four out of the five beneficiaries of capacity building efforts are well-established businesses that would arguably flourish with or without RIU assistance. However, the key point that emerges from this

experience is the fact that this was a conscious and brave decision deemed optimal for the platform. In this case the private sector provided the best possible option because it had the infrastructure and requisite skills, which would save project time and administrative overheads. The RIU coordinator also points out that the idea was to establish a revolving fund where the initial beneficiaries would pay back funds advanced for hatchery development from the proceeds of fingerling sales. This revolving fund would be helped along using the skills of established businesses. The form of the platform is thus shaped by the functions it is playing at any moment in time. Brokering for the development of networks is mainly an art in responding to interests and concerns of the stakeholders.

5. CONCLUSION

This paper has presented a trajectory of developments in the fish farming value chain in Malawi. A constant challenge has been the declining availability of *chambo* — a staple table fish — due to production constraints, despite the availability of technologies capable of reversing the situation. A turning point came when the problem was reframed as a networking one, rather than as solely a technological problem. Catalysing this networking by bringing together different skill sets — what we are calling brokering roles — has been the major transforming factor. Data presented in this paper has shown that brokering in the country programmes (in this case, Malawi) is a process that is shaped by the environment the programme is operating in. This flexibility in the role of the brokering agent is critical to allow for innovativeness.

This has been a case of a project operating in a policy environment ready for the intervention, with other state policies and initiatives such as the Presidential Initiative for Aquaculture Development in place. The nature of the brokering by the RIU Malawi programme, thus, was shaped by the context of the existing policy context. Future research needs to study those instances where the broker is breaking new ground in policy terms.

REFERENCES

ADiM (2005). National Fish Farmer's Socio Economic Survey Report 2003. Working Paper No. 3, Aquaculture Development in Malawi: Lilongwe.

Biggs, S.D. (1990). "A Multiple Source of Innovation Model of Agricultural Research and Technology Promotion". *World Development*, 18, 1481-1499.

Clark, N. (2002). "Innovation Systems, Institutional Change And The New Knowledge Market: Implications For Third World Agricultural Development". *Economics of Innovation and New Technology,* 11, 353 - 368.

Dijkman, Jeroen (2010). "Africa Matters: Emerging Lessons from the Africa Country Programmes". RIU Discussion Paper Series #2010-09, November 2010, Research Into Use (RIU): UK.

Donda, S. and Njaya, F. (2007). *Fisheries Co- Management in Malawi: An Analysis of the Underlying Process.* WorldFish Centre: Cairo.

Ellis, F., Kutengule, M. and Nyasulu, A. (2003). Livelihoods and Rural Poverty Reduction in Malawi, *World Development,* Volume 31, Number 9, September 2003 , pp. 1495-1510(16).

Farrington, J. and Biggs, S. (1990). *Agricultural Research and the Rural Poor.* Berman: London.

Government of Malawi (2007). The National Fisheries and Aquaculture Policy. Lilongwe.

Hall, A.J., Rasheed Sulaiman, V. Clark, N.G. and Yoganand B. (2003). From Measuring Impact to Learning Institutional Lessons: An Innovation Systems Perspective on Improving the Management of International Agricultural Research. *Agricultural Systems*, 78 (2), 213-241.

Horne, M. (2008). *Honest Brokers: brokering Innovation in Public Services.* The Innovation Unit http://www.scribd.com/doc/7397718/.

Katunga, A. (2007). Proceedings of the Malawi National SADC- MAPP Consultative Workshop Held at Malawi Institute of Management (MIM) Lilongwe, Malawi from 4th to 5th October, 2007.

Kaunda, E. (2010). Aquaculture Research and Training in Malawi: A Review. JICA Master Plan Study on Aquaculture Development in Malawi. JICA: Malawi.

KIT (2006). *Farmers Organisations and Agricultural Innovation*. *Case Studies from Benin, Rwanda and Tanzania,* Bulletin 374 The Royal Tropical Insitute (KIT): Amsterdam.

Klerkx, L. & Leeuwis, C. (2008a). "Balancing Multiple Interests: Embedding Innovation Intermediation in the Agricultural Knowledge Infrastructure". *Technovation,* 28, pp. 364-378.

Klerkx, L. & Leeuwis, C. (2008b). "Matching Demand and Supply in the Agricultural Knowledge Infrastructure: Experiences with Innovation Intermediaries". *Food Policy*, 33, pp. 260-276. Brokerage in Evolving Innovation Systems, 209.

Klerkx, L. Aarts, N. & Leeuwis, C. (2010) "Adaptive management in agricultural innovation systems: The interactions between innovation networks and their environment, *Agricultural Systems*, 103 pp.390–400.

Mkandawire, P.T. (1999). Agriculture, Employment and Poverty in Malawi *International Labour Office/Samat Discusion Paper Series 9* . ILO: Harare.

Njaya, F. & Chimatiro, S. (1999). Technology Strategies for Fisheries and Fish Farming: Sustainable Livelihood Systems in Malawi. A Report prepared for UNDP/MIRTDC.

RIU (2010). *Malawi RIU Newsletter,* Research Into Use (RIU): UK.

Rukuni, M; Blackie, M.J. and Eicher,C.K. (1998). "Crafting Smallholder –Driven Agricultural Research Systems in Southern Africa." *World Development,* 26, 6. 1073-1087.

Ruitenbeek, J. and Cartier, C. (2001). The Invisible Wand: Adaptive Co-management as an Emergent Strategy in Complex Bio-economic Systems, Centre for International Forestry Research (CIFOR) Bogor: Indonesia.

Sarewitz, D. and Pielke, R. (2007). "The Neglected Heart of Science Policy. Reconciling Supply of and Demand for Science", *Environmental Science and Policy* 10. 5-16.

Sumberg, J. (2005). "Systems of Innovation Theory and the Changing Architecture of Agricultural Research in Africa". *Food Policy*, 30, pp. 21-41.

Tesfaye L.T, Puskur R., Hoekstra, D. and Azage, T. (2010). "Commercializing dairy and forage systems in Ethiopia: An innovation systems perspective". Working Paper 17. ILRI (International Livestock Research Institute), Nairobi, Kenya.

World Bank (2008). World Development Report 2008: Agriculture for Development. World Bank, Washington D.C.

THE RIU DISCUSSION PAPER SERIES
(Available for download at www.researchintouse.com)

2010-01 *Research Into Use: Investigating the Relationship Between Agricultural Research and Innovation*
By Andy Hall, Jeroen Dijkman and Rasheed Sulaiman V.

2010-02 *Bottom-up, Bottom-line: Development-Relevant Enterprises in East Africa and their Significance for Agricultural Innovation*
By Andy Hall, Norman Clark and Andy Frost

2010-03 *Innovation Systems, Economic Systems, Complexity and Development Policy*
By Norman Clark

2010-04 *Putting Research Into Use: A Market Failure Approach*
By Norman Clark and Ian Maudlin

2010-05 *It May Take A Little While..: Insights on Agricultural Research for Innovation and Development in Nigeria*
By Utiang P. Ugbe

2010-06 *Gender and Agricultural Innovation: Revisiting the Debate Through an Innovation Systems Perspective*
By Ann Kingiri

2010-07 *New Organisational and Institutional Vehicles for Managing Innovation in South Asia: Opportunities for Using Research for Technical Change and Social Gain*
By T.S. Vamsidhar Reddy, Andy Hall and Rasheed Sulaiman V.

2010-08 *The Innovation Trajectory of Sleeping Sickness Control in Uganda: Research Knowledge in its Context*
By John Morton

2010-09 *Africa Matters: Emerging Lessons from the RIU Country Programmes*
By Jeroen Dijkman

2010-10 *What Does Innovation Smell Like? A Conceptual Framework for Analysing and Evaluating DFID-RIU Experiments in Brokering Agricultural Innovation and Development*
By Utiang P. Ugbe

2010-11 *Studying Rural Innovation Management: A Framework and Early Findings from RIU in South Asia*
By Rasheed Sulaiman V., Andy Hall, Vamsidhar Reddy T.S. and Kumuda Dorai

2011-12 *Organised Retailing of Fresh Fruit and Vegetables: Opportunities for Putting Research Into Use?*
By Rasheed Sulaiman V., N.J. Kalaivani, Jatinder Handoo, Vamsidhar Reddy T.S., Kumuda Dorai and Andy Hall

2011-13 *Beyond Knowledge Brokerage: An Exploratory Study of Innovation Intermediaries in an Evolving Smallholder Agricultural System in Kenya*
By Catherine W. Kilelu, Laurens Klerkx, Cees Leeuwis and Andy Hall

2011-14 *The When and Where of Research in Agricultural Innovation Trajectories: Evidence and Implications from RIU's South Asia Projects*
By Vamsidhar Reddy, T.S., Andy Hall and Rasheed Sulaiman V.

2011-15 *Dynamics of Biosciences Regulation and Opportunities for Biosciences Innovation in Africa: Exploring Regulatory Policy Brokering*
By Ann Kingiri and Andy Hall

2011-16 *Necessary But Not Sufficient: Information and Communication Technology and its Role in Putting Research Into Use*
By Rasheed Sulaiman V., Andy Hall, N.J. Kalaivani, Kumuda Dorai and Vamsidhar Reddy, T.S.

2011-17 *Functions and Forms of Brokerage in the Malawi Fisheries Platform*
By Elias Madzudzo