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**STUDYING RURAL INNOVATION MANAGEMENT: A FRAMEWORK  
AND EARLY FINDINGS FROM RIU IN SOUTH ASIA**

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DORAI

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# STUDYING RURAL INNOVATION MANAGEMENT: A FRAMEWORK AND EARLY FINDINGS FROM RIU IN SOUTH ASIA

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## Abstract

This paper aims to map the experience of the RIU Asia projects and draw out the main innovation management tactics being observed while laying the groundwork for further research on this topic. It provides a framework to help analyse the sorts of innovation management tasks that are becoming important. This framework distinguishes four elements of innovation management: (i) Functions (ii) Actions (iii) Tools and (iv) Organisational Format. The paper's review of the distribution of innovation management in the Asia projects suggests that it is not technology access-related tasks alone that are important, but the bundling of these with other activities, which include the development of networks, advocacy for policy change, training and other negotiated changes in practice and action. The implication for policy is that ways of supporting this wider suite of innovation management tasks would go a long way in helping make better use of agricultural research in rural development.

**Key words:** Innovation Management, Agricultural Research, Innovation, Development, Policy, Value Chain Development, South Asia, Innovation Trajectory, Functions, Actions, Tools, Organisational Format

**JEL Codes:** L26, L31, L33, N5, N55, O13, O19, O21, O22, O31, O32, O33, O53, Q13, Q16

## RIU DISCUSSION PAPER SERIES

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## LIST OF ACRONYMS

<b>ACMVD</b>	-	African cassava mosaic virus disease
<b>ADB</b>	-	Asian Development Bank
<b>AFP</b>	-	Adivasi Fisheries Project
<b>AIT</b>	-	Asian Institute of Technology
<b>AKVAFORSK</b>	-	Institute of Aquaculture Research in Norway
<b>BAIF</b>	-	Bharatiya Agro Industries Foundation
<b>BARI</b>	-	Bangladesh Agricultural Research Institute
<b>BELA</b>	-	Bangladesh Environment Lawyers Association
<b>BFRF</b>	-	Bangladesh Fisheries Research Forum
<b>BFRI</b>	-	Bangladesh Fisheries Research Institute
<b>CARE</b>	-	Cooperative American Relief for Everywhere
<b>CASRAD</b>	-	Centre for Agrarian Systems Research and Development, Vietnam
<b>CAZS</b>	-	Centre for Arid Zone Studies, Bangor, United Kingdom
<b>CBOs</b>	-	Community-Based Organisations
<b>CBSPs</b>	-	Community-Based Seed Producers
<b>CFUGs</b>	-	Community Forest User Groups
<b>CGIAR</b>	-	Consultative Group on International Agricultural Research
<b>CIP</b>	-	Centro Internacional de la Papa (International Potato Centre)
<b>COB</b>	-	Client Orientated Breeding
<b>CPHP</b>	-	DFID's Crop Post-Harvest Programme
<b>CPSL</b>	-	Centre for Promoting Sustainable Livelihoods, India

<b>CRS</b>	-	Catholic Relief Services
<b>CRT</b>	-	Central Research Team, RIU
<b>DAE</b>	-	Bangladesh's Department of Agricultural Extension
<b>DASP</b>	-	Decentralization of Sustainable Aquaculture Project
<b>DFID</b>	-	Department for International Development, UK
<b>DoF</b>	-	Department of Fisheries, Bangladesh
<b>DSP</b>	-	Decentralised Seed Production
<b>EBRM</b>	-	Ecologically-Based Rodent Management
<b>FAO</b>	-	The United Nations Food and Agriculture Organization
<b>FAVRI</b>	-	Fruit and Vegetables Research Institute, Vietnam
<b>FECOFUN</b>	-	Federation of Community Forest Users, Nepal
<b>FORWARD</b>	-	Forum for Rural Welfare and Agricultural Reform for Development
<b>GATE</b>	-	Global Agritech Nepal Private Limited
<b>GFRAS</b>	-	Global Forum for Rural Advisory Services
<b>GIFT</b>	-	Genetically Improved Farmed Tilapia
<b>GVT</b>	-	Gramin Vikas Trust
<b>GYA</b>	-	GY Associated Ltd.
<b>ICAR</b>	-	Indian Council for Agricultural Research
<b>ICF</b>	-	Innovation Challenge Fund
<b>ICLARM</b>	-	International Center for Living Aquatic Resources Management (Renamed as the World Fish Center)
<b>ICUC</b>	-	International Centre for Underutilised Crops
<b>IDE</b>	-	International Development Enterprises
<b>IPM</b>	-	Integrated Pest Management

<b>LI-BIRD</b>	-	Local Initiatives for Biodiversity Research and Development
<b>LINK</b>	-	Learning INnovation Knowledge
<b>NEEFJ</b>	-	Nepal Forum of Environmental Journalists
<b>NEHHPA</b>	-	Nepal Herbs and Herbal Products Association
<b>NFEP</b>	-	Northwest Fisheries Extension Project, Bangladesh
<b>NGOs</b>	-	Non-Governmental Organisations
<b>NRM</b>	-	Natural Resource Management
<b>ODA</b>	-	Overseas Development Administration (Renamed DFID)
<b>PCI</b>	-	Participatory Crop Improvement
<b>PMCA</b>	-	Participatory Market Chain Approach
<b>ProSCAB</b>	-	Promoting Sustainable Coastal Aquaculture in Bangladesh
<b>R&amp;D</b>	-	Research and Development
<b>RAAKS</b>	-	Rapid Appraisal of Agricultural Knowledge Systems
<b>RDRS</b>	-	Rangpur Dinajpur Rural Service
<b>RIU</b>	-	Research Into Use
<b>RNRRS</b>	-	Renewable Natural Resources Research Strategy
<b>S&amp;T</b>	-	Science and Technology
<b>SHGs</b>	-	Self-Help Groups
<b>SWRM</b>	-	Society for Water Resources Management
<b>UK</b>	-	United Kingdom
<b>UN</b>	-	United Nations
<b>USA</b>	-	United States of America

## 1. INTRODUCTION

The Research into Use programme (RIU), supported by the UK's Department for International Development (DFID), is a major departure in agricultural research and development practice. Perhaps for the first time, a major international sponsor of agricultural research has established a substantial learning-orientated programme that specifically seeks to understand how research can best be used for impact. Conceptual, empirical and policy debates on this topic are very clear on how this question should be framed: namely, that it is an issue of understanding how the process of innovation can best be managed and how research can best be organised so that it is integrated into the innovation process to achieve social and economic aspirations (for a review of this perspective see Hall et al., 2010).

While the question is clear, finding ways to explore this question empirically and in a systematic way are far from easy. Ways of organising and managing innovation are usually shaped by the contexts in which they emerge (which are themselves constantly changing in unpredictable ways), so the idea of introducing experimental “treatments” becomes highly problematic. To make the same point differently, ways of organising innovation are not clinical, neat applications of standard approaches. Instead these are the messy processes that arise as a consequence of path-dependent, historically-determined situations that play out over time, where those involved have made the best of what the world has thrown at them — for better or worse. The defining feature here is that of local styles of managing innovation in the face of an ever-changing context. In practice this means that the approach deployed is constantly changing and developing. The same approach may not work anywhere else and it may not be fit-for-purpose when the next set of unpredictable events arises, but it is the starting point. The best that policy can do is to look for promising generic tactics and to support adaptive behaviour (Hall and Clark, 2010).

RIU has struggled with these issues when establishing its experiments because, in many senses, the programme has defined itself by the approach to innovation management it has



advocated and promoted in its projects: initially an innovation systems “approach” (although it was never entirely clear what such an approach might entail) and later a private enterprise-led approach (also similarly fluid in definition). These approach-caricatures then became a filter for selecting projects and monitoring their performance. This paper, however, argues that if programmes such as this are to learn how to manage innovation for putting research into use for impact, the key experimental design issue concerns creating the conditions in which one can observe different contextually-relevant ways of managing innovation and then learning how the principal protagonists in the process adapt their strategies in the face of unpredicted events and circumstances. Through a mixture of good luck and good design RIU has ended up with a portfolio of projects which, as this paper will show, demonstrates enormous richness of innovation managing experience. What then supersedes the “approach”/ treatment as the key analytical device for the experiment is the framework that is used to draw lessons.

This paper develops such a framework, uses it to map some of the experiences in the RIU projects in Asia and draws out the main innovation management tactics being observed. The framework distinguishes four elements of innovation management: (i) Functions (ii) Actions (iii) Tools and (iv) Organisational Format. The paper builds upon and further clarifies the research design of RIU that is presented by Hall et al. (2010). That design made use of stylised innovation narratives; that is to say stylised broad approaches to innovation (participation; public-private sector partners, etc.). The framework presented in this paper seeks to examine in much greater detail the innovation management tasks being used and the bundling of these in different contexts. This helps move away from the emphasis on stylised generic approaches implied by the innovation narratives, which obscure the eclectic nature of innovation management. The paper, therefore, also sets the scene for further investigation using this framework of innovation management in RIU and its role in putting research into use.

The paper begins with a discussion of the notion of adaptation as this seems to be a central driver of innovation and it is, therefore, through this lens that the task of innovation management needs to be understood.

## 2. MULTI-LEVEL UNPREDICTABILITY: THE CHALLENGES OF INNOVATION MANAGEMENT

The discussions on alternative paradigms of agricultural research are as old as its deployment for developmental purposes. Reviews of these debates can be seen in World Bank, 2006; Hall et al., 2010 and many other places, so these will not be presented here. Notable in these debates is the prominence of an innovation system perspective. The origins and interpretation of this perspective have been discussed *ad nauseam* in recent years. Despite these scholarly efforts it is still not entirely clear whether such extensive musings have impinged in any way on the common narrative used to plan and evaluate agricultural research and innovation efforts. Rather than attempt to make yet more conceptual contributions on this topic we wish to highlight one particular element of these debates, which seems to have relevance to our exploration of innovation management for putting research into use. The topic is the notion of ‘adaptation’.

In many senses agricultural development has always been an issue of adaptation. In part this has been the underpinning of the attempts to upgrade agricultural systems by adapting them with new technology, agronomic and animal husbandry practices. However, adaptation has a much longer history and more fundamental role in agriculture. Paul Richards (1989) sums this up very nicely when he talks of agriculture as a performance. By this he means that the task of farming is not a routine one that is repeated year after year, but rather it is a one-off annual show where each year conditions are different (weather, prices, family crisis and fortunes, the World Cup, war, crop and animal disease outbreaks, global market and political conditions, etc.) and farmers have to muddle through and make the best out of it.

Hall and Clark (1995 and 2010) document this muddling-through process with cases from Asia and Africa. They draw on complex systems thinking to describe the evolutionary dynamic of farming systems. In their 2010 paper they describe the consequences of a plant disease outbreak in Uganda and point out the path-dependent set of adaptations that took place in cropping patterns, food consumption practices, economic activities and social

relations — each of which operated as an interlinked sub-system. The analysis identifies the farmer at the centre of an evolutionary mechanism used to cope with change and gives primacy to the capacity to respond to changing circumstances through adaptation and innovation.

Like Richards before them, Hall and Clark (2010) explain that households and rural entrepreneurs make the best of these shocks through adaptation, but these adaptive capacities have their limits. These limits relate mainly to the disconnect between these farm-level adaptive capacities and processes and the huge array of technological, financial, entrepreneurial and policy resources that are readily available in society at large and which, if properly channelled and linked, could build a powerful collective capacity for adaptation, innovation and change. Alas, this broad-based notion of capacity building is rarely understood in policy circles. The greatest irony of all is that this notion of capacity building is the single most important message that the ubiquitous innovation systems concept provides and which these same policy-makers now make so much of. Yet, we still see national government and development investors planning and implementing rural development programmes (which have a strong capacity building agenda — social organisations, microfinance and micro-enterprise development) entirely separately from agricultural and other forms of research and learning. In other words, despite grand innovation systems rhetoric, science, technology and innovation are not actually considered worth integrating with rural capacity building efforts. As a result research continues to churn out findings while sponsors of this research remain puzzled by how this can be put into use.

There are a number of points worth amplifying here. The first is about complexity and the nature of systems that exhibit this characteristic. Again, this is a topic of debate rife with seductive traps for conceptual musing. But key to our discussion here is the way the interactions of many elements of a system produce unexpected and unpredictable outcomes; Hall and Clark (2010) explain how a cassava disease outbreak in Uganda led to a different role for women in agricultural production. Keskin et al. (2008) explain how the development of the tourist industry in East Africa led to a successful meat processing industry in Kenya. Shambu Prasad (2005) describes the way a soil fertility treatment

(spirulina) ended as a food supplement, prompted by the needs of earthquake relief programmes.

Ideas about complexity also suggest that as the number of elements in a system increases the pace and unpredictability of change increases as well — and this is happening where rural economies are becoming more intertwined with national, regional and global economic systems (see Hall, 2009). In a world driven by complexity, development success (be it in social or economic terms) is not a result, therefore, of mastery of a particular production technique or even of knowledge-based capacities such as research. Rather, in a world driven by complexity success is determined by the capacity to adapt. And because this involves reworking ideas, resources and relations and links, adaptive capacity is synonymous with innovation capacity and this is needs to be viewed as a collective multidimensional entity. It includes farm-level processes and it includes policy and institutional environments. It includes skills and it includes networks linking these together. But the critical take-home message for our discussion is that this capacity cannot be considered in terms of its component parts. Capacity is the emergent property of the system as a whole.

The next point worth highlighting is that of path-dependency. At its very simplest this means that the starting conditions of any endeavour tend to shape how it proceeds. The same applies to innovation and the nature of the consequent trajectory that this follows over time. By the same argument, such trajectories cannot really be understood without understanding their historical emergence. Take the CGIAR, for example; why is it like it is still (largely) a commodity-focused research initiative in pursuit of technological silver bullets? Agricultural extension is another case in point; why is it still focused on a narrow innovation support task such as technology transfer? The answer lies in their histories. The broader point for our discussion here is that this adaptive capacity discussed above is always going to look quite different depending on starting conditions. So, in some instances, innovation management services, such as agricultural extension, are provided by the public sector. But in countries with a different historical development, the market or civil society may be the way of providing such services. Collective action may be routine in some countries, but almost impossible to organise in others, so different ways of managing the innovation process will have grown up in these different settings.

The final point worth amplifying brings us back to the role of policy in an era demanding adaptive capacities. Whereas in the past policy was seen as a way of orchestrating socially-useful innovation trajectories through projects and programme, Hall and Clark (2010) suggest that the role of policy will be to identify emerging nascent capacities and trajectories and support them (see also Hall et al., 2010). This presents some considerable challenges for public policy. For example, what might the role of agricultural extension be in this sort of situation? For the Research Into Use programme this is actually the key question and it is a topic on which there is now considerable debate.

Extension, as already alluded to above, has got stuck as an agency for technology transfer (Rivera and Sulaiman, 2009). The recent international clamour around the establishment of a Global Forum for Rural Advisory Services (GFRAS) does not seem to have been accompanied by a reconceptualisation of this mode of innovation support services. As we have seen the adaptation task that farmers face has always involved much more than technological adaptation. As the context of agriculture become ever more integrated with global scale phenomena (climate change, financial, trade and regulatory regimes, etc.) and conditions become ever more unpredictable and dynamic, adaptation assumes a much greater importance and at a scale that includes but goes way beyond farm-level agronomic practice.

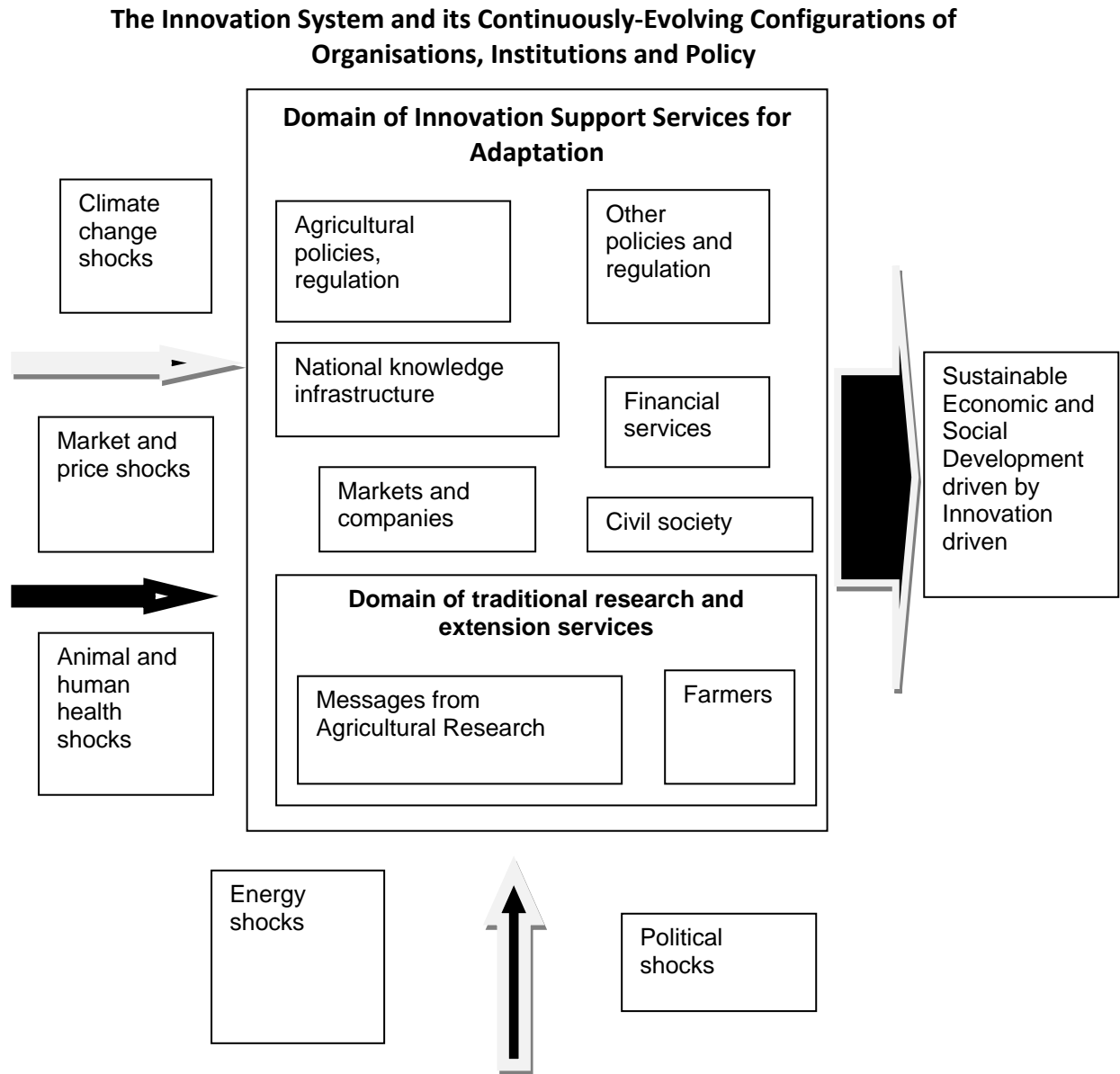
Leeuwis and Hall (2010) have recently explored what the contemporary adaptation agenda might mean for innovation support services — these are the services needed to manage innovation when this is understood to take place in systems or networks of different organisations and changing contexts. They use the example of climate change as a driver of adaptation, but argue that this is a metaphor for a range of opportunities and challenges being faced in the contemporary agricultural development scenario. The core of their argument is that innovation is a process involving a range of tasks. These tasks take place in three domains<sup>5</sup>: (i) Technical Application (farming, agro-processing, marketing) (ii) Organisations Involved in Supporting Application (research, finance, advisory services, input

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<sup>5</sup> Ugbe (2010) discusses similar domains in the context of impact assessment.

supply, market players and companies) and (iii) The Policy Domain (legislation, regulation, routine practices). This is illustrated in Figure 1 below.

**Figure 1: The Expanded Domain of Innovation Services in a Dynamic, Global Environment**



*Leeuwis and Hall (2010)*

Given the above, research and its use can now be seen as being one part of the innovation management task associated with adaptation. However, the key insight that ideas such as innovation systems thinking have provided is to recognise that tasks in these three domains

have little meaning on their own (see the argument earlier in this section over the notion of adaptive capacity needing to include rural and national resources, etc.). Instead adaptation and innovation are understood to involve a coherent set of tasks and actions across all these domains. In other words adaptation is about managing innovation at these multiple levels. Partly this concerns bringing together different ideas and resources from different sources; it also concerns getting users of ideas to influence the development and adaptation of ideas and technology. In part it is also about ensuring that the policy and institutional environment allows innovation to take place. This, in turn, might mean enabling new forms of coherent action that unleash innovation (for example, new types of partnerships and alliances), or it might involve policy and institutional change that allow new products, services and approaches to be implemented (for example, community-based resource management).

In the old way of thinking about agricultural innovation, innovation was a task related to the production of ideas by research, and the supply of these by extension to farmers and then their consequent use. Innovation management in this earlier framing, therefore, was about making sure farmers were aware about new ideas. As can be seen above, the idea of innovation as a process distributed throughout economic systems and defined by a more broad-based capacity for adaptation greatly broadens the scope of the innovation management task and points to the importance of a role that is not directly involved with innovation, but which involves connecting up different elements and helping coordinate coherent action (Hall, 2005). These wider tasks are referred to variously: some call it boundary work (Kristjanson et al., 2009); others refer to it as intermediation (Howells, 2006; Klerkx and Leeuwis, 2008) and, more recently, the term 'innovation brokers' has been used (Klerkx and Leeuwis, 2009).

The current literature on these topics points to generic innovation management tasks that one would expect to see in a research-into-use-type experiment (this classification draws on a number of sources, including Klerkx and Leeuwis, 2009, but has been elaborated on and reorganised by the authors).

## **Functions**

- Network development
- Organisation of producers and consumers into groups
- Enhancing access to technology, expertise, markets, credit, inputs
- Advocacy for institutional and policy change
- Technical and field practice support for policy formulation and policy learning
- Training on new approaches and ways of working
- Articulation of research and technology needs of users
- Organising foresight and vision exercises
- Conflict resolution
- Reflective learning

## **Actions**

- Brokering
- Convening
- Negotiating
- Facilitating
- Advocating
- Coaching
- Mediating
- Disseminating

## **Tools**

- Innovation platforms
- Research and development consortia
- Policy working groups
- Business incubators
- Innovation challenge funds

## **Organisational formats**

- Research organisations



- Public advisory services
- Civil society organisations
- For-profit and hybrid companies
- Industry/ producer/ user associations and other sector coordinating bodies
- Think tanks
- Third-party technology brokers
- Venture capital funds
- Information portals/ specialist media/ e-commerce

It is important to stress that the old innovation management tasks of providing access to technology are not superseded by these new tasks. Rather, these old tasks only have usefulness as part of a wider set of tasks that allow innovation to take place. For the question of how to put research into use for innovation, understanding what these wider sets of tasks are and understanding how they should be operationalised and by whom in different innovation trajectories with different starting points becomes critical.

### 3. THE RIU PROGRAMME IN ASIA AND ITS INNOVATION MANAGEMENT HYPOTHESIS

#### *Historical Development*

Commissioned by DFID in 2006, the Research into Use (RIU) programme has two purposes. Firstly, it is to get the best research results from past DFID-supported research into widespread use in Africa and South Asia. Secondly, it is to draw lessons on the process of putting research into use; in other words, to tease out when and under what circumstances and settings a range of different approaches become more or less useful in making the best use of agricultural research as a policy instrument for development.

In South Asia, RIU selected 13 projects through a competitive grant process as part of its Innovation Challenge Fund (ICF) and the project interventions started in July 2008. These were modest-scale projects (budgets in the range of £150-500,000 over three years), building on earlier research by members of project teams. As originally conceived there was no organising principle for the selection of projects or for lesson learning from the projects. Following a review of the projects in June 2009, the project portfolio was reduced to 11. The review screened the projects on the basis of two criteria: (i) Was there potential for achieving impact at scale? And was there potential for learning lessons about putting research into use? The projects dropped were either too research-like with low potential for impact or because they deployed implementation strategies that showed little promise in terms of informing the programme about how research could be used for innovation.

Following this review and the subsequent appointment of a Central Research Team (CRT), which included authors of this paper, the remaining 11 projects were clustered for lesson learning purposes along the following lines:

- Participatory Crop Improvement Innovation
- Innovation in Value Chains
- Innovation in Natural Resource Management
- Others

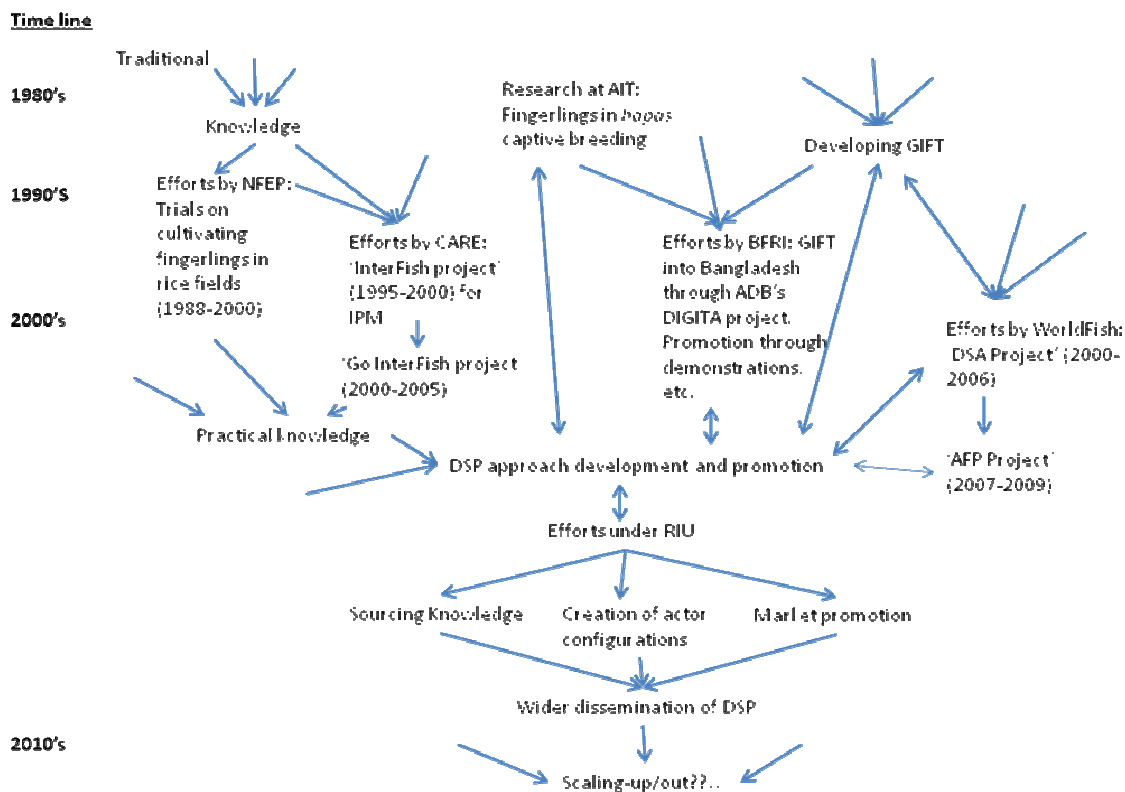
A brief description of the projects is provided for reference purposes in Appendix 1. More details on projects can be found in Vamsidhar Reddy et al, 2010, and at

[www.researchintouse.org](http://www.researchintouse.org). As an exemplar we provide a detailed history of one project so that readers can get a sense of the nature of the RIU projects and, particularly, the location of RIU activities in the wider history of these initiatives.

**Case Study of an RIU Asia Project: Decentralised Seed Production (DSP) in Bangladesh**

This project is focused on setting up a decentralised micro enterprise-based supply network to supply fingerlings of an improved breed of tilapia — the project refers to this as fish seed and the approach as decentralised seed production (DSP). The project is led by Rangpur Dinajpur Rural Service (RDRS), a well-established and respected NGO based in the northwest of Bangladesh — an area of heightened rural poverty, where integrated fish and rice production systems is a key livelihood strategy. The project builds on an extensive history of research and development activities in Bangladesh and internationally. This innovation trajectory is illustrated in Figure 2 below).

**FIGURE 2. INNOVATION TRAJECTORY FOR APPLICATION OF DSP THROUGH RIU**



Source: Reddy, Vamsidhar T.S. (2010)

## Developing the DSP approach

Several largely un-connected efforts seem to have contributed to the development of the DSP approach. One stream of efforts was first launched in 1991 by a project called Northwest Fisheries Extension Project (NFEP)<sup>6</sup> in northwest Bangladesh. The research-oriented staff of NFEP attempted decentralised common carp seed production through the collection and then translocation of spawn deposited by annual floods on aquatic plants in household ponds and ditches to rice fields. The encouraging results of this initiative prompted the Integrated Rice Fish (InterFish) Project<sup>7</sup> to promote fish cultivation in rice fields as part of Integrated Pest Management — fish ate the larvae of pest. During this period, efforts were limited to common carp. This, however, changed with the introduction of GIFT (Genetically Improved Farmed Tilapia). These had originally been developed by ICLARM (renamed as WorldFish Center) in collaboration with many research and development agencies<sup>8</sup>. The Asian Development Bank (ADB) helped the Bangladesh Fisheries Research Institute (BFRI) to introduce GIFT in 1994 as part of a project on “dissemination and evaluation of genetically-improved tilapia in Asia”. This strain offered distinct advantages for farmers. In 1999, NFEP introduced this improved strain of tilapia as part of a research trial with farmers. The Go-Interfish project, implemented by CARE during 2000-2005, further promoted the production of common carp and tilapia (GIFT) in rice-field plots.

Another stream of efforts that contributed to the development of DSP was the result of a collaboration between the Asian Institute of Technology (AIT), WorldFish Center (a CGIAR centre) and the Institute of Aquaculture in the University of Stirling, UK. Financial support for these initiatives largely came from the UK’s Overseas Development Administration (the predecessor to DFID) through its RNRRS programme and the Asian Development Bank. These partners worked with national government departments and NGOs to advance

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<sup>6</sup> The Northwest Fishers Extension Project (NFEP) was supported by DFID in two phases during 1988-2000. The regional focus was the impoverished Northwest region of Bangladesh. NFEP trained and used more than 1,000 fish seed traders and more than 250 secondary school teachers as extension agents. They established more than 200 model villages in which more than 9,000 farmers received training in aquaculture.

<sup>7</sup> The InterFish Project was implemented by the Cooperative American Relief for Everywhere (CARE) with financial support from DFID.

<sup>8</sup> Research efforts for developing GIFT were initiated in 1988 through a collaboration between ICLARM, the Institute of Aquaculture Research of Norway (AKVAFORSK), and three Philippine institutions: the Freshwater Aquaculture Centre of Central Luzon State University, the Marine Science Institute of the University of the Philippines, and the Bureau of Fisheries and Aquatic Resources.

technical aspects of developing appropriate hatchery systems for low-cost freshwater fish. As a result, technologies for tilapia (in both commercial and small-holder situations), small carp and snakeskin gourami<sup>9</sup> were developed or refined. Through the “Aquaculture Outreach project” (funded by the ODA under its RNRRS programme) the initiative promoted improved availability of quality fish seed for farmers and explored different approaches to suit different conditions. As a result of these efforts, the importance and usefulness of seed production by farmers or seed production with greater involvement of farmers was established. Subsequently, a research project on “improving fresh water seed supply and performance in smallholder aquatic systems in Asia” (funded by DFID under RNRRS — R-7052) clarified many earlier perceptions and further advanced knowledge about freshwater fish seed production in Asia. The DSP approach, therefore, evolved by cumulating knowledge from these different research and development efforts.

### **Emerging demand for DSP to address problems in freshwater aquaculture**

Fresh water aquaculture is very important for the livelihoods of villagers in northwest Bangladesh. Good quality fish-seed is critical for the success of fresh-water aquaculture. Although there are many public and private sector hatcheries, these exist in clusters and are distantly located. Poor transport facilities (fish seed is usually transported by seedling traders or ‘*patheelwalas*’ in metal pots tied to bicycles) and longer distances result in higher mortality and transportation costs. Monsoon-dependent farming results in higher demand and higher costs of fish-seed during peak seasons. All these factors act as serious constraints for small-holder farmers when it comes to accessing good quality fish seed. To address these issues, decentralised fish-fingerling production in rice fields by farmers was suggested as an option, after establishing its feasibility through the efforts mentioned above.

Several attempts were made to popularise this decentralised approach by agencies such as the Department of Fisheries (DoF), Bangladesh Fisheries Research Institute (BFRI), WorldFish and several NGOs. These included special projects, such as the Decentralization of Sustainable Aquaculture Project (DASP)<sup>10</sup> and the Adivasi Fisheries Project (AFP)<sup>11</sup>, to

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<sup>9</sup> A type of fish (biological name *Trichopodus pectoralis*)

<sup>10</sup> Implemented by the WorldFish Centre in collaboration with about 40 NGOs throughout Bangladesh during 2000-2006. Activities focused on creating awareness about and training NGO staff on DSP

demonstrate its usefulness to farmers: campaigning on the radio and television and through the efforts of NGOs such as RDRS. Individual farmers who participated directly in these efforts continued to grow fish seed in their rice fields. However, the approach was not taken up widely. The main reason for this was the lack of an appropriate supply chain and support services mechanism to ensure regular supply of GIFT fingerlings, provide necessary technical knowledge and purchase multiplied fingerlings. (See Figure 3 later on in this section)

### **Application of DSP through the RIU initiative**

It was at this point that the support of RIU entered the picture. To address the constraints discussed above, RDRS led a consortium of NGOs from the Northwest region to collaborate with partners with specific expertise. These included IDE Bangladesh (International Development Enterprises) for their market development expertise, World Fish Centre for its technical expertise and the Bangladesh Department of Fisheries for its technical advisory mandate. The consortium built the necessary organisational architecture to apply DSP. Rice-field farmers, table-fish farmers, seasonal pond owners, and fingerling traders were selected and encouraged to be part of the initiative. Roles to be played by each of them were specified and interactions among them facilitated by the project. They were supported with necessary training and finance. A few selected table fish growers (pond owners) in different regions were encouraged to play roles as ‘satellite brood rearers’ (suppliers of GIFT brood fish to interested rice-field farmers). A number of educated and unemployed youth from local areas were selected and trained to play the role of field technicians to provide motivation and technical knowledge, and clarify any doubts farmers interested in DSP may have had. World Fish Centre representatives and personnel from the Department of Fisheries helped these field technicians through technical backstopping. IDE, which has extensive expertise in developing rural markets, designed and implemented locally-specific activities to develop markets for fingerlings and build relationships among different actors along the fish-seed supply chain. The Department of Fisheries promoted and managed a “brood bank” to ensure a sustainable supply of brood stock to satellite brood rearers. Some individuals — selected from fingerling traders, rice-field farmers and table-fish growers — were promoted as ‘local entrepreneurs’ and were provided with necessary knowledge and

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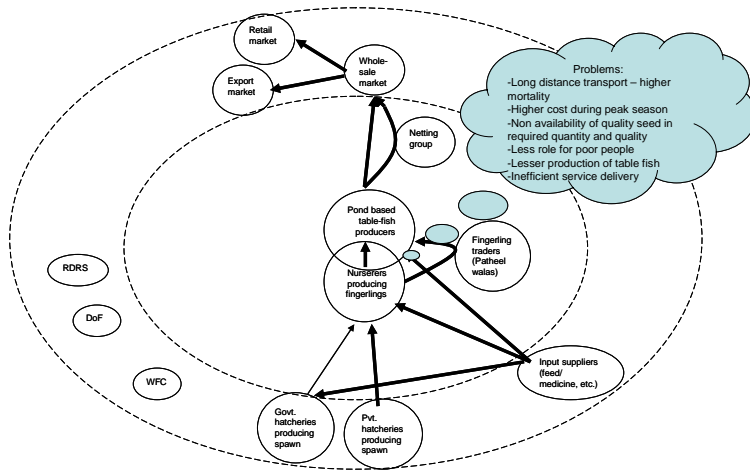
<sup>11</sup> WorldFish Centre promoted DSP with common carp, GIFT and carp in rice fields in its Adivasi Fisheries Project in northwest (Rangpur, Dinajpur and Jaypurhat Districts) and northern (Sherpur and Netrokona Districts) Bangladesh

skills to promote the DSP concept, benefiting through increased businesses. Many locally-relevant ideas were implemented with regards to the composition of fish species to be cultivated, size of the ditch and bunds in the rice fields, feeding patterns, ensured water supply during dry seasons, etc. The tacit knowledge of different functionaries (including field technicians, rice-field farmers, 'satellite brood rearers', fingerling traders, nursery owners, fishery department officials, NGO staff, etc.) was utilised for devising these approaches.

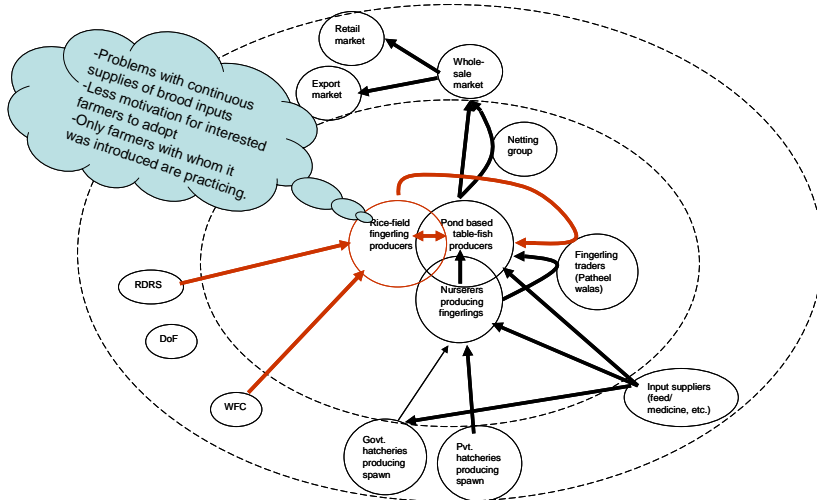
What is important to note at this point is that RIU resources were mainly used by the project to help bring in partners to an initiative that had, in many senses and in many different forms, been in operation for more than 10 years. The main feature of what the partners actually used RIU resources for was to improve the scope and quality of relationships and attendant processes necessary for innovation. In this case the innovation was a marketing and institutional innovation that allowed poor farmers to access and benefit from improved fish breeds. It also important to realise that RIU provided no recipe for how these processes should be managed and this was pretty much left up to the resourcefulness of the partners involved. A critical element of this was the identification of skill sets required to address emerging issues. So, for example, the project struggled initially as RDRS had little marketing expertise. This was resolved by bringing in IDE, which has a strong track record of setting up marketing systems for the poor. This meant that patterns of partnership evolved considerably as the innovation trajectory of DSP unfolded (see Figure 3)

Part of this task of selecting and managing an evolving configuration of partners was to create a win-win situation for all participating agencies. In this scenario, rice field farmers benefited from additional income with minimal adjustments to their rice plots and little additional investments. Table-fish pond farmers, who acted as 'satellite brood rearers', benefited from additional income by selling brood fish to rice-field farmers. They promoted rice-field fingerling production as they could sell brood fish to other farmers. Traders benefited from accessing good quality fingerling locally and at better prices. Thus, they were also keen on promoting rice-field fingerling production. The project, therefore, shows great potential for sustainability, given the promotion of DSP by different agencies to further individual business interests.

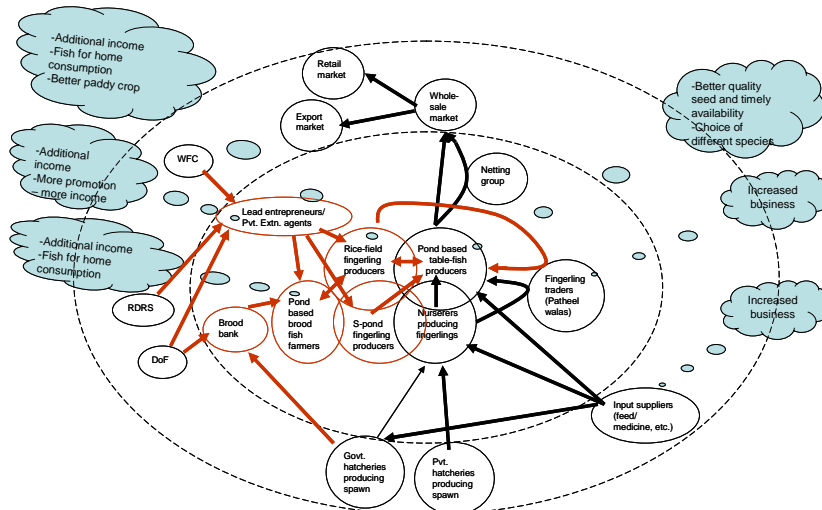
**FIGURE 3. DIFFERENT STAGES OF STAKEHOLDER ARCHITECTURE IN PROMOTION OF DSP**



Situation 1:  
Relevant actors  
and their  
relationships:  
Starting conditions



Situation 2:  
Relevant actors  
and their  
relationships: DSP  
introduced in  
individual farmers'  
fields



Situation 3:  
Relevant actors  
and their  
relationships: DSP  
introduced by an  
creating  
appropriate  
architecture of  
stakeholders

Source: Reddy, Vamsidhar T.S. (2010)



### **Innovation Management Hypotheses for the RIU South Asia Projects**

Reviewing the Asia project proposals reveals that these were, at best, set up with a rather simplistic theory of change. However, as the above discussion of one of these projects indicates, the projects had implicit working hypotheses that shaped their organisation and modus operandi, which suggests that a more sophisticated tacit theory of change was at play. In exploring the South Asia projects it would seem useful to retrospectively construct these hypotheses. This has been done by the authors based on reviews of original project proposals and through extended discussion with the organisations implementing the projects. Table 1, which is presented later on in this sub-section, presents these implicit hypotheses and predicts wider insights on innovation management that each project can provide.

Three sorts of implicit hypotheses are presented:

*(i) The RIU hypothesis*

At the time projects were conceived the narrative of the programme was about putting research findings into wider use. So, despite programme rhetoric about systems of innovation “approaches”, projects found it necessary to present themselves as having a rather archaic technology transfer logic: for example, producing more seed to improve demand and uptake; institutional innovations from Latin America that could be transferred to South Asia, etc.

*(ii) Specific implementation hypotheses*

The projects explicitly presented a range of novel ways that the technology transfer hypothesis would be operationalised. For example, setting up seed companies, training community-based groups, linking up new value chains, etc.

*(iii) Innovation management hypotheses*

Again, these were often unstated hypotheses about the way innovation and the use of research would take place. These are, perhaps, the most interesting as they reveal how projects actually went about managing the innovation process. RIU stipulated the use of partnerships. However, as our subsequent description and analysis of the projects reveal,

project teams (even in pre-RIU activities) had been deploying quite sophisticated innovation management strategies that include but go beyond partnership. Some of this involved brokering and maintaining partnerships and relationships. But this was not just in operational field domains but also in policy and institutional domains. As we shall see some of the projects clearly knew many of these innovation management tasks from earlier experience, while others had to learn them along the way.

**TABLE 1: HYPOTHESES AND PROCESS INSIGHTS (INNOVATION MANAGEMENT RESEARCH QUESTIONS ASSOCIATED WITH RIU PROJECTS IN SOUTH ASIA)**

	Themes and project titles	RIU Hypothesis	Implementation Hypothesis	Innovation Management Hypothesis	Process insight Questions/Innovation Management Research Questions
<b>I</b>	<b>Participatory Crop Improvement in Asia</b>				
	Improving Livelihoods in South Asia through Sustained Access to New Technologies in Rainfed Agriculture [India, Bangladesh]	Increasing the availability of seeds will increase demand and thereby enhance further production and use of quality seeds	Subsidised mass production and distribution of seeds and its promotion through NGOs and Community-Based Seed Producers (CBSPs)	Original research leaders can convene NGO partners to implement scaling-up	How are partnerships characterised and the role of key players defined?
	New Rice and Legume Seed from Client-Oriented Breeding (Nepal)	Increasing the availability of seeds will increase demand and thereby enhance further production and use of quality seeds	Subsidised mass production and distribution of seeds and its promotion through NGOs and CBSPs  Establishing seed companies under NGOs can supply appropriate seeds to poor people	Original research leaders can support NGO partners in scaling up	What are the mechanisms for managing the use of plant breeding expertise in seed production?  How are regulatory and policy issues dealt with?
	Poverty Reduction through Crop Intensification into Rice Fallows (Nepal)	Increasing the availability of seeds will increase demand and thereby enhance further production and use of quality seeds	Subsidised mass production and distribution of seeds and its promotion through NGOs and CBSPs  Establishing seed companies under NGOs can supply appropriate seeds to poor people	Original research leaders can support NGO partners in scaling up	How do different organisational formats evolve in different contexts to deal with commercial production of seeds? (Producer companies and NGO-sponsored seed companies)
<b>II</b>	<b>Value Chain Innovation</b>				
	Linking Farmers with Markets for Rural Prosperity (Nepal, Vietnam, Cambodia)	An institutional innovation from Latin America can be adopted and widely applied	Linking the existing actors in the value chain	Use previous track record of brokering market system development to develop	How are partnerships characterised and the role of key players

		in Nepal		relationships among actors in the value chain	defined?
	Coalition to Diversify Income through Under-Utilised Crops (India, Vietnam)	Piloting community-based production, processing and marketing arrangements will lead to promotion and uptake of under-utilised crops	Organise crop fairs and establish germplasm orchards and food processing parks at the community level to establish new value chains	International research leaders can coordinate the implementation of this activity through NGOs in India and the national research system in Vietnam	How does the relative success of approaches that establish new value chain compare with the value of strengthening existing ones?
	Developing Fish Seed Value Chain in Bangladesh	Promotion of the decentralised fish seed production approach will increase availability of quality fish seed	Linking actors in the new value chain	A coalition that combines technical expertise with NGOs and market system brokers can create a new and sustainable value chain	What are the mechanisms for managing research expertise in value chain development?  How are wider regime changes in institutions and policies dealt with?
<b>III</b>	<b>Natural Resource Management Cluster</b>				
	Integrated Floodplain Management (Bangladesh)	Training more Community-Based-Organisations (CBOs) in the Integrated Floodplain Management approach would lead to its scaling up	Training CBOs and broker their links with technical, legal and policy expertise	Researchers can organise a coalition with local NGOs — handling implementation brokering — and a legal support partner — handling policy brokering	How are partnerships characterised and the role of key players defined?  How does one address changes in techno-institutional regimes?
	Reducing Poverty through Innovation Systems in Forestry-Forest Action	Improved governance in community forest management can be achieved by training more groups	Training Community Forest User Groups (CFUGs for local level institutional development and using this evidence to influence macro policy	Special NGOs can act as brokers between communities and government	What brokerage mechanisms are used at field, organisational (including research) and policy levels? What is the nature (what) and operation (how) of micro and macro policy

					<p>brokering?</p> <p>Role of policy brokering in allowing research to be applied at the community level</p>
<b>IV</b>	<b>Others</b>				
	Roji Roti: Promoting Sustainable Livelihood Development (India)	Access to credit allows poor women to access production inputs and technology	Institutional development at community level and brokering linkages to financial services and inputs agencies will create a demand pull for drawing new technical knowledge	A combination of institutional development and brokering to inputs and services will lead to the setting up of a sustainable hybrid company that deals with non-banking financial services and inputs	<p>How are partnerships characterised and the role of key players defined?</p> <p>What is the effectiveness of a business model that combines financial and technical brokering?</p>
	Rat Management for Rural Communities (Bangladesh)	Increasing the supply of rat traps will reduce rat population, if communities are trained in community-based rat management	Local NGOs can train communities and companies can manufacture rat traps	Technology transfer and training adequate for widespread adoption of the technology	
	Promoting Sustainable Coastal Aquaculture in Bangladesh (ProSCAB)	Training fishing communities in new technologies leads to wide scale use	Training and establishing enterprise groups by NGOs will connect fishing communities to markets and facilitate technology adoption	Researchers can broker a coalition that will lead to local enterprise development and use of research findings	<p>How are partnerships characterised and the role of key players defined?</p> <p>What is the nature and operation of the sector co-ordinating body?</p>

## 4. WHAT DOES INNOVATION MANAGEMENT REALLY INVOLVE?

Our earlier discussion predicted a large range of innovation management functions, actions, tools and organisational formats. While the RIU project portfolio in Asia has not demonstrated all of these it still illustrates a diversity of tasks involving innovation management to put research into use (These are summarised in Table 2 later on in this section). It is also notable that projects do not just deploy one function or one action but cluster these. The following points seem to be important:

### Functions

#### *(i) Networking and partnership building*

Without exception projects have performed this function, but there have been a number of different variants. Most projects have built partnerships to implement the project and have often named these partners in project documentation. These project partners are distinct from those in operational partnerships — that is to say partnerships/ networks that the project sought to build to manage the innovation process. For example, the projects dealing with value chain development had to broker relationships among a variety of market agents, input dealers and producers. The projects dealing with promoting seeds developed through Participatory Crop Improvement had to network with seed growers, local agro-vets (agro-input sellers), millers and radio stations.

#### *(ii) Setting up/ Strengthening user groups*

Setting up user groups and building their capacity is another common function undertaken by all these projects. Community-based seed producer (CBSPs) groups in Participatory Crop Improvement; community-based organisations (CBOs) and community forest user groups (CFUGs) in Natural Resource Management; self-help groups for micro-finance, occupational groups under the ProSCAB project on commercial production of marine products in Bangladesh, etc., are all such examples, where the projects either had to form or work with existing user groups to manage innovation.

### *(iii) Training*

Training user groups and other actors in the wider implementation network is another important function these projects have had to undertake. Topics covered included quality seed production, brood fish management, fingerling production, rodent management, democratic governance of forests, enterprise development, business skills, account keeping, etc. In other words it was both technical training associated with a particular technology-based innovation as well as training in wider aspects of organisational and institutional development.

### *(iv) Advocacy for institutional and policy change*

As policy plays an important role in the wider uptake of knowledge, all the projects are either collaborating with policy-relevant partners or are looking for opportunities to engage with policy actors at the national level. While promoting Participatory Crop Improvement, the projects in Nepal had to engage with the Nepal Agricultural Research Council and the National Seed Board to bring about changes in policies related to varietal release and seed laws. This was essential in order to get the NGOs official recognition for their role in plant breeding and release of varieties as well as their promotion of good practices, including the promotion of community-based seed producers in government seed self-sufficiency programmes.

The Integrated Floodplain Management project in Bangladesh had to engage with policies related to lease of water bodies and needed support to deal with legal challenges. The project is working closely with the Society for Water Resources Management (SWRM) — a federation of water management community-based organisations — to influence policies. Community-based forestry enterprises can succeed in Nepal only if the forestry department's excessive bureaucratic controls could be relaxed; thus, the Federation of Community Forest Users, Nepal (FECOFUN) is an important partner in the community forestry project in that country. Both Nepal's Forest Action and the Bangladesh Environment Lawyers Association (BELA) have extensive experience in working for policy change and are part of several policy-level consultations.

*(v) Enhance access to technology, expertise, markets, credits and inputs*

Rural communities need access to a wider set of support and other services to apply the new knowledge being promoted. Projects, therefore, had to enhance access to technology, expertise, markets, credit and inputs. For instance, the Roji Roti microfinance project began its activities by forming self-help groups before lending to them, and then linking the communities to sources of inputs, technology, sources of larger credit and technical training on crop production and small enterprise development. The Pro-SCAB project on promoting aquaculture technologies set up two crab hatcheries to support enterprise groups on crab fattening enterprises promoted under the project. It also had to link the groups to market agents (retailers and exporters) in the fish value chain. The project on promoting community value addition initiatives in under-utilised crops had to search for small-scale technologies for processing millet in India to support the communities it was working with.

*(vi) Reflective learning*

Reflective learning is an important function in most of the projects and this is evident from the wide range of consultation-based activities undertaken. These include reviews, reflections, experience sharing workshops, negotiations among different groups, study visits, setting up resource centres, etc. This is more evident in the natural resource management cases, where workshops to reflect on past progress and decide on future course of action are held regularly.

## **Actions**

A wide range of actions had to be taken to manage innovation and this is more or less common across all projects.

*(i) Convening*

As innovation management requires performing several functions and coordinating a wide range of partners, convening meetings, platforms, consultations, and discussions among the implementation and operational teams is an essential action that needs to be undertaken by project teams. While the lead partner has been doing this activity at the implementation level, other partners have been performing this activity at the field level with other implementation partners. Who performs this action is essentially decided based on the nature as well as location of the task at hand. For instance, in the value chain project in



Nepal, while the lead partner IDE convened project meetings and interfaced with policy (the Department of Agriculture, the National Agricultural Research Council, donors, etc.) the Marketing and Planning Committee convened other kinds of training and linking activities at the community-managed collection centre-level.

#### *(ii) Brokering*

Innovation management essentially depends on creating many-to-many relationships among the wide range of actors. This action, which involves developing, maintaining and strengthening these relationships, is increasingly considered an important feature of innovation management. The brokering in the RIU projects was found to be implemented by different organisations at different levels, depending on tasks at hand and expertise. Some organisations involved have a long history of brokering. For instance, IDE is considered an important market development broker and under RIU in Nepal and Bangladesh it has been brokering relationships among the actors in the horticulture and freshwater fisheries value chain respectively. Forest Action in Nepal is a policy broker and a well-recognised think tank on forest policy management and under the RIU project it has been brokering relationships with the federation of community forest user groups and the state forest department.

#### *(iii) Facilitating*

This is a more operational task, where the lead partner needs to ensure different sets of activities take place. For instance, the network of NGOs associated with the Integrated Floodplain Management project in Bangladesh facilitates discussions of community-based organisation members around the issue of Participatory Action Plan Development. The Centre for Promoting Sustainable Livelihoods (CPSL), the specialist micro-finance NGO in the state of Bihar in India, facilitates poor women to link with sources of technical expertise related to agriculture and small household-level enterprise development. Similarly, Forward and Li-bird, the two NGOs in Nepal, facilitate the community-based seed producers to access public funding from government sources to strengthen infrastructure.

#### *(iv) Coaching*

This action is closely related to building capacities of user groups and other partner organisations through 'hand-holding' so that they can better articulate their needs,

perceptions and views to others. This involves some training, but is something more than that. For instance, in the community forest management project in Nepal, formation of hamlet-level committees and thematic committees have helped rural communities to understand clearly the roles and functions of community forest user groups and how to manage them. Similarly, Forward and Li-bird have been coaching community-based seed producers (CBSPs) on improving their business skills. It is this kind of coaching that has allowed the CBSPs to partner with the new seed companies being put in place by the project. The value chain project on promoting decentralised fish seed production in Bangladesh is coaching actors in the value chain on managing produce in a way that will allow them to sustain and expand this enterprise.

*(v) Advocating*

Advocating for changes in policies and institutions is a critical activity for successful innovation management. Inviting policy-relevant staff from government agencies in project deliberations held at district and national levels is a commonly-used activity across various projects. Organisations such as BELA and Forest Action are members of committees and policy working groups formed by the governments in Bangladesh and Nepal, respectively. This allows them to present evidence from RIU projects to advocate for relevant changes in policy. Another strategy employed is to work with federations of user groups, which are relatively more powerful in a democratic set-up. Partnering with FECOFUN (the Federation of Community Forest User Groups) and SWRM (a federation of Community-Based Organisations) allows the Natural Resource Management projects under RIU to advocate better.

*(vi) Information Dissemination*

Although this is a traditional activity, it has an important role in innovation management. What is interesting here is the power of this activity when performed in relation to the other sets of activities mentioned above. The Participatory Crop Improvement projects in Nepal used FM radios, which are very popular in rural Nepal, to disseminate information on the availability and significance of seeds produced by the community-based seed organisations. The rat management project in Bangladesh has been promoting improved rat management practices on national television. The community forest management project in Nepal has

invested resources in community radio stations in Nepal to sensitise listeners to new ways of governing community-managed forests.

*(vii) Negotiating*

This activity involves the process of reaching a satisfactory compromise or agreement between individuals or groups. For instance, conflicts between farmers and fishermen over dry season water are a common feature in the floodplains of Bangladesh. Through a series of workshops the project on Integrated Floodplain Management reached a consensus between two parties, ultimately using technological and institutional options to maximise floodplain productivity. Hamlet-level and thematic committees formed by Nepal's community forest management project negotiate over rights of marginalised and poor people at forest user group meetings.

*(viii) Mediating*

This is a form of conflict resolution in which the mediator tries to improve dialogue between disputants to help parties reach an agreement. For instance, in the floodplain management project in Bangladesh community-based organisations are often at odds with rural elites over issues of leasing and using water bodies. The Bangladesh Environment Lawyers Association (BELA) advises and supports CBOs but also mediates between the CBOs and the rural elites toward reaching some sort of resolution outside the courts.

**Table 2: Innovation Management Features in RIU South Asia Projects**

	Themes and project titles	Innovation Management Features			
		Functions	Actions	Tools	Organisational Focus
<b>I</b>	<b>Participatory Crop Improvement in Asia</b>				
	Improving Livelihoods in South Asia through Sustained Access to New Technologies in Rainfed Agriculture (India, Bangladesh)	<b>Network development</b> (e.g., development of project coalition and implementation network) <b>Setting up user groups</b> (e.g., organising seed producers) <b>Training</b> (e.g., on technical aspects and business skills) <b>Advocacy for institutional and policy change</b> (e.g., seed laws and varietal release)	Convening Brokering Facilitating Advocating Coaching	Grain cash seed banks  Producer Company	UK- based /International crop research group
	New Rice and Legume Seed from Client-Oriented Breeding (Nepal)	<b>Network development</b> (e.g., development of project coalition and implementation network) <b>Setting up user groups</b> (e.g., organising seed producers) <b>Training</b> (e.g., on technical aspects and business skills) <b>Advocacy for institutional and policy change</b> (e.g., seed laws and varietal release)	Convening Brokering Facilitating Coaching Advocating Disseminating Information	Community-Based seed producer groups  NGO-led private commercial seed production company	Civil Society Organisation  For-profit hybrid company
	Poverty reduction through crop intensification into rice fallows (Nepal)	<b>Network development</b> (e.g., development of project coalition and implementation network) <b>Setting up user groups</b> (e.g., organising seed producers) <b>Training</b> (e.g., on technical aspects and business skills) <b>Advocacy for institutional and policy change</b> (e.g., seed laws and varietal release)	Convening Brokering Facilitating Advocating Coaching Disseminating Information	Community-Based seed producer groups  NGO-led private commercial seed production company	Civil Society Organisation  For-profit hybrid company
<b>II</b>	<b>Value Chain Innovation</b>				
	Linking Farmers	<b>Network development</b>	Facilitating	Participatory	Market development

	with Markets for Rural Prosperity (Nepal, Vietnam, Cambodia)	(e.g., development of project coalition and implementation network) <b>Training</b> (e.g., training market committee members on leadership development, account keeping, product marketing) <b>Advocacy for institutional and policy change</b> (e.g., using the advisory committees comprising policy-relevant staff from the government for presenting the approach and results to facilitate wider uptake of this approach by the Government of Nepal)	Convening Brokering	Market Chain Analysis Thematic Groups Market Planning Committees Project Advisory Committees	Non-profit NGO
	Coalition to diversify income through under-utilised crops (India, Vietnam)	<b>Network development</b> (e.g., development of project coalition and implementation network) <b>Training</b> (e.g., on production and processing aspects to producer groups) <b>Articulation of research and technology needs of users</b> (e.g., demand for new technologies to deal with community-level processing of millet in India)	Convening Facilitating	Community germplasm orchards Village Crop fairs Food processing parks	International Research Organisation
	Developing fish seed value chain in Bangladesh	<b>Network development</b> (e.g., development of project coalition and implementation network) <b>Training and demonstration of new approaches and ways of working</b> (e.g., training on brood fish management, fingerling production, establishing a new sustainable value chain) <b>Market promotion and market place development</b> (e.g., posters and signboards and developing a new fingerling marketplace)	Convening Facilitating Brokering	Value chain development  Use of lead entrepreneurs	NGO
III	<b>Natural Resource Management Cluster</b>				
	Integrated Floodplain Management (Bangladesh)	<b>Network development</b> (e.g., development of project coalition and implementation network) <b>Training local groups</b> (e.g., training to community-based	Convening Negotiating Brokering Advocating	Community-Based User groups	Legal support NGO

		<p>organisations on Integrated Pest Management, water management, etc. and organising exposure visits)</p> <p><b>Advocacy for institutional and policy change</b> (e.g., training community leaders on policies, laws, advocacy and lobbying)</p> <p><b>Enhance access to technology, expertise, markets, credit and inputs</b>(e.g., linking community-based organisations to local service providers)</p> <p><b>Conflict resolution</b> (e.g., out-of-court settlement through negotiation and legal support when required)</p> <p><b>Reflective learning</b> (e.g., regular workshops to reflect on progress and decide on future course of action)</p> <p><b>Support to policy learning</b> (e.g., workshops and conventions on access and legal obstacles)</p>	Mediating	<p>Participatory Action Plan Development</p> <p>Community resource centres</p> <p>Policy working groups</p>	
	Reducing Poverty through Innovation Systems in Forestry (Nepal)	<p><b>Network development</b> (e.g., development of project coalition and implementation network)</p> <p><b>Technical and field practice support to policy formulation and policy learning</b> (e.g., drawing policy-relevant lessons from field implementation and using this for policy deliberations at meso and macro levels)</p> <p><b>Advocacy for institutional and policy change</b> (e.g., promoting policy-relevant findings through forest policy seminar series, a monthly deliberation organised by Forest Action on forest policy governance in Nepal)</p> <p><b>Strengthening user groups</b> (e.g., Training community forest user groups and decentralised hamlet-level committees on democratic governance of forests and use of community radio to disseminate best practices)</p> <p><b>Reflective learning</b>(e.g., use of cluster-level sharing workshops, district level meetings and national workshops)</p>	<p>Convening</p> <p>Negotiating</p> <p>Brokering</p> <p>Advocating</p> <p>Mediating</p> <p>Disseminating</p> <p>Information</p>	<p>Thematic Committees</p> <p>Policy working groups</p> <p>Community-Based resource centres</p> <p>Cluster-level sharing workshops</p> <p>Forest Policy Seminar Series</p>	Policy think tank and action research NGO
<b>IV</b>	<b>Others</b>				
	Roji Roti: Promoting Sustainable	<b>Network development</b> (e.g., development of project coalition and implementation	Brokering Financing	Non-Banking Financial	International Consultancy

	Livelihood Development (India)	<p>network)  <b>Access to credit, technical expertise and inputs</b> (e.g., training local volunteers to act as a source of micro-credit, production inputs and technical knowledge)  <b>Advocating for policy and institutional change</b> (e.g., sharing lessons with other microfinance institutions, training other agencies in adopting this approach to rural service delivery and liaising with the industry association on microfinance)</p>	Facilitating	Company  Farm input intermediary/distributor	Company
	Rat Management for Rural Communities (Bangladesh)	<p><b>Network development</b> (e.g., development of project coalition and implementation network)  <b>Training</b> (e.g., community rodent management and use of improved rat traps)</p>	Convening Facilitating	Research-Extension-Private manufacturer consortium	Local NGO
	Promoting Sustainable Coastal Aquaculture in Bangladesh (ProSCAB)	<p><b>Network development</b> (e.g., development of project coalition and implementation network)  <b>Organising local groups</b> (e.g., setting up occupational groups)  <b>Training</b> (e.g., training farmers on improved technologies and setting up enterprises)  <b>Access to inputs and markets</b> (e.g., establishing hatchery and links to traders and hotel industry)</p>	Convening Facilitating Mediating	Research and Extension, NGO consortia  Private Hatchery	Sector Co-ordination body

## **Tools**

Tools are the formats or operational mechanisms used in projects to manage innovation — innovation platforms being the most commonly-cited, albeit less tangible option. The grain cash seed bank is another tool or a mechanism adopted at the community-level to help resolve the issue of seed availability. Community-based seed producer groups, producer companies and other organisational forms such as NGO-led private commercial seed production companies are all formats that allow bringing together different actors and complementary knowledge needed for managing innovation. Participatory Market Chain Analysis is a tool used to strengthen the value chain in the IDE-led project in Nepal. To implement this approach, other forms of platforms had to be created, including thematic committees, marketing and planning committees, etc. Community-based germplasm orchards and food processing parks are other tools used in the value chain projects. Community resource centres are used as tools for knowledge sharing and dissemination in the Natural Resource Management projects. Advisory/steering committees are tools to enhance visibility of the interventions to policy-makers.

## **Organisation formats**

There is a diversity of organisations leading the RIU initiatives. These vary from international research institutes (such as CAZS, ICUC), NGOs (Li-Bird, Forward, RDRS, Aid Comilla), private consulting firms (GYA), specialist market brokering NGOs (IDE), legal support NGOs (BELA), policy think tanks (Forest Action) and sector co-ordination bodies (BFRF). The manner in which project coalitions have been formed by such diverse organisations has partly to do with the history or evolution of these initiatives over the years. It is this path-dependency that has led to the emergence of this wide diversity of organisational formats convening these initiatives. Another reason for this diversity is the diversity in functions and activities that is needed for innovation management and the comparative advantage of certain kinds of organisations in leading such initiatives. For instance, leadership by an organisation such as Forest Action is critical for promoting institutional and governance innovation in community forest management in Nepal, whereas one needs an organisation like IDE in Nepal to lead an initiative that relies on strengthening the relationships among various actors in the value chain. Both have special expertise and credibility when it comes to



dealing with these challenges. While researchers led many of the previous initiatives that focused on the generation of new knowledge, in most of the cases they play a secondary or supporting role as the nature of leadership and knowledge required for innovation management is much broader than what researchers can bring in.

## **5. DISCUSSION: TOWARDS AN UNDERSTANDING OF HOW TO MANAGE INNOVATION IN ORDER TO PUT RESEARCH INTO USE IN SOUTH ASIA**

The purpose of this paper is to set the scene rather than draw definitive conclusions about RIU's projects in Asia. What does it tell us about studying rural innovation management for putting research into use? And what are some of the wider implications for policy and practice? The following observations might be useful.

The framework developed in Section 3 for looking at innovation management seems to have been useful in terms of unpicking the fine-grained detail about what is actually involved in this task. The RIU research design (see Hall et al., 2010) had suggested exploring innovation for putting research into use through the lens of six innovation narratives as follows: 1) Poor User-Led Innovation 2) Public-Private Partnership-Led Innovation 3) Capacity Development-Led Innovation 4) Below-the-Radar-Led Innovation 5) Investment-Led Innovation 6) Research Communication-Led Innovation. Hall et al. (2010) acknowledge that these narratives are overlapping and that they are stylised policy options. The use of the innovation management task framework deployed in this paper, however, seems to be a more useful way of capturing the broad scope and eclectic nature of innovation management. It avoids getting caught up in the dilemma of deciding which narrative best describes a particular project or activity. Similarly, it avoids the tendency to pigeon-hole groups of action as being an 'approach'. Instead, it has a much more pragmatic flavour, focusing on what is actually being done and worrying less about what it is called.

What quickly become apparent when one looks at the detail of RIU projects is that the way innovation is managed is a highly iterative process. This is particularly apparent when one takes a more historical look at the innovation trajectory, like the one on fish seed. But even in the confines of the RIU projects there is iteration; again, an example from the fish seed project is the way a partner with marketing systems expertise needed to be brought in. This raises questions about how experiments should be organised and studied. One option would be to organise these as action-learning or action-research projects, where the

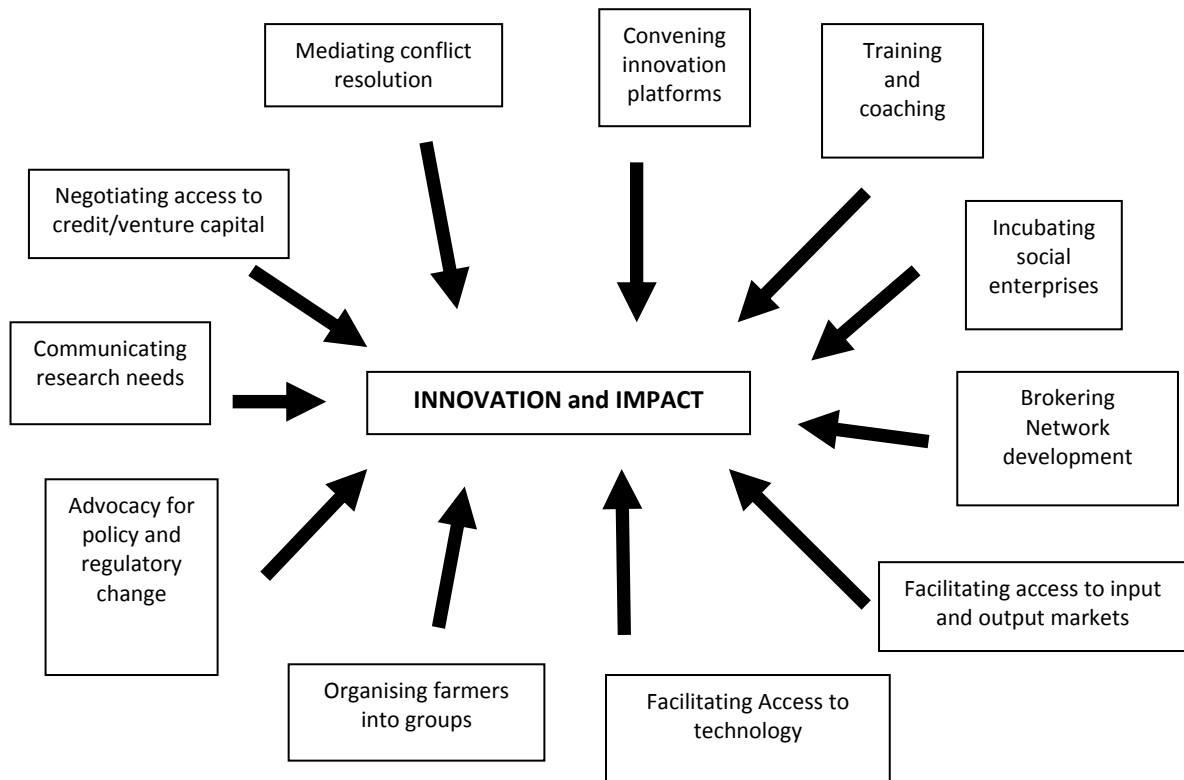
function of research is to both help drive iteration as well as help draw wider lessons. RIU has, however, set up its research activities in a way that is operationally and administratively separate from the projects that it is deriving lessons from. There are pragmatic reasons for this — not least of which was the fact that the projects started some 2 years before the research was started. More importantly, however, since the purpose of RIU's research is to inform policy of better generic strategies for using research for innovation and impact, keeping the research at arms-length from the operation of projects seems wise for objectivity reasons. This does not, however, detract from the observation that more systematic learning within project teams could help drive project iteration around the modes of innovation management deployed. This could be achieved by formally organising interventions such as action research initiatives or alternatively it could also be achieved by simply strengthening monitoring and learning functions. This is not a new idea for many of the project teams in Asia as this has been considered good practice in development programmes for some time. Organisations in some of the RIU projects — the Forest Action-led one, for example — have indeed gone one step further and actively written up lessons from their work for wider consumption. A logical step further might be to cluster these types of initiatives as communities of practice to strengthen these lesson learning dimensions.

In a similar vein when one takes a more historical look at the RIU projects and the way they are managing innovation, it is clear that for many of them this is not a sudden shift from doing either development or research projects. Instead what is apparent is that these two distinctions have been blurring in practice for quite some time. The existence of a range of sophisticated strategies to manage innovation means that this has not happened overnight, and it has been a pragmatic response to dealing with the goals of the various organisations involved. If this is the case then development planning needs to revisit how it goes about providing support to rural development. The main thing that stands out is that intermediary organisations — and these are often civil society organisations adopting enterprise-like principles— may not necessarily have a technical stake in the innovation process they are managing. This not an entirely new finding: For example, Clark et al. (2003) describes the way one such civil society organisation succeeded as an intermediary organisation, managing innovation not because it had expertise in the topic (packaging in the case

discussed), but precisely because it did not; therefore it was unburdened of preconceived approaches and ideas. This is not to say that civil society organisations have a free hold on acting as intermediaries. And, indeed, as this paper has showed a range of organisational types can perform innovation management tasks. There are still empirical questions about whether, under some circumstances and for specific objectives such as social equity, some types of organisations are more suited to performing this task in rural development domains than others.

This leads to a preliminary finding about the nature of innovation management that seems to have profound implications for how the issue of putting research into use is tackled. The review of the Asia projects does not only reveal the diversity of innovation management tasks that are being performed, but it also stresses the bundling together of these. Of course, the Klerkx and Leeuwis typology that is presented in an adapted form in Section 2 stresses the interdependence of these activities. However, what this review of RIU projects highlights is that while facilitating access to technology is important in putting research into use, this as one of a range of innovation management tasks only has value when it is bundled together with other supportive tasks (access to markets, convening consortia, etc). This is illustrated in Figure 4. This has a very important implication for policy. It means that putting research into use requires projects, organisations and/or initiatives whose chief characteristic is not primarily as a conduit to technology but rather is one of being able to undertake a much wider range of innovation management tasks. This mirrors findings about RIU's best projects in which new types of enterprises servicing economic and social goals are performing these roles as a pragmatic part of their business model (Hall et al., 2010)

**Figure 4. Innovation Management Tasks**



Our exploration of these cases has also revealed a number of other observations that we feel merit recording here.

The first concerns projects ‘dumbing down’ to access donor funds. The original proposition of the RIU programme — of identifying research products that could be rolled out right away — seems, in retrospect, ludicrously simplistic when compared to sophisticated innovation management strategies that projects deployed. It is highly questionable whether any of the projects really believed that this was a final push to have impact. In reality many seem have recognised that they were somewhere along the way in a long trajectory of learning about particular development topics and how to tackle them.

The problems they encountered were diverse: forest management, the nature of plant breeding or Asia marketing systems. What the project teams needed was more funding to move them further along that trajectory (some are already into their post-RIU funding). A

cynic might say that the projects simply comprised groups of researchers and NGOs hopping from one source of donor funding to the next. This probably needs to be balanced by the recognition that there isn't an end point for putting research into use, because, like development itself, it is a continuous process of adaptation and change. Certainly this raises further questions about how the development process should be funded.

The second point is about a sense of humility in the bigger scheme of the innovation trajectories. It is clear that RIU should be thankful that these projects did present themselves for funding because what these groups of researchers and development practitioners brought with them was a historically-derived set of experience and strategies, which appear to be highly relevant to the innovation task as it is now understood. RIU's operational contribution was to promote the use of partnerships as a generic principle. That prescription (although soundly-based) cannot be equated with the sophisticated set of tasks and strategies that we are seeing deployed. This is a rather humbling observation. It suggests that RIU experiments are more like buying a ticket to watch a show than they are about setting up the biggest show in town. This is not a trivial point as it suggests that policy support (for example, supporting RIU-like programmes) needs to change fundamentally. It is no longer about creating these innovation trajectories but looking at how best to support such on-going threads of learning, entrepreneurship, innovation and change in relevant areas. This is where RIU has been more successful, by later bringing in business skills to help projects when this has emerged as a rate limiting step of expertise. But, as the projects themselves demonstrate, there is a very wide set of innovation tasks needed. And we also see gaps: for example, visioning and foresight exercises — equally important for managing change in dynamic markets as they are in the face of unpredictable climate change. The research of RIU needs to get a much better understanding of how all these innovation support activities can best be organised and provided for (who pays, who provides).

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## APPENDIX 1: THE SOUTH ASIA PROJECT PORTFOLIO

The following provides a brief description of the South Asia projects:

### **Cluster 1: Participatory Crop Improvement in Asia**

#### *(i) Improving Livelihoods in South Asia through Sustained Access to New Technologies in Rainfed Agriculture (India)*

This initiative, led by the Centre for Arid Zone Studies (CAZS), Bangor, UK, focuses on promoting the uptake of upland varieties developed through Participatory Crop Improvement in Central and Eastern India. It partners with two NGOs — namely, Gramin Vikas Trust (GVT) and Catholic Relief Services (CRS) — to disseminate these seeds widely. It focuses on strengthening the capacity of seed producer groups, with the main mechanism deployed being the grain cash seed bank. The initiative is now planning to set up a producer company to commercially produce and market quality seed evolved through Participatory Crop Improvement.

#### *(ii) Poverty Reduction through Crop Intensification into Rice Fallows in Nepal*

This initiative led by the Forum for Rural Welfare and Agricultural Reform for Development (Forward) — an NGO in Nepal — focuses on promoting rice and legume seeds developed through Participatory Crop Improvement by strengthening the capacity of community-based seed producer groups to produce these seeds and then disseminating these seeds as small kits. In this project, it partners with another NGO — Local Initiatives for Biodiversity Research and Development (Li-Bird) — and CAZS, Bangor. Forward has now set up a seed company called Global Agritech Nepal Private Limited (GATE) to produce and market these seeds.

#### *(iii) New Rice and Legume seed from Client-Oriented Breeding (Nepal)*

The NGO Li-Bird leads this initiative in collaboration with Forward and CAZS. It also has similar objectives, such as strengthening community-based seed producers and achieving the wider dissemination of seeds developed through Participatory Crop Improvement as

seed kits. Li-Bird has also established a seed company, called the Anmolbiu Seed Company Private Limited, to produce and market quality seeds of rice and other crops produced.

## **Cluster 2: Value Chain Innovation**

### *(i) Linking Farmers with Markets for Rural Prosperity*

This initiative, led by International Development Enterprises (IDE) in Nepal, Vietnam and Cambodia, is about building and strengthening linkages and partnerships among market chain actors through the promotion of the Participatory Market Chain Approach (PMCA)<sup>12</sup>. In Nepal the project is focusing on building the capacity of market planning committees and developing trust among various actors in the existing value chain, including the management of collection centres, farmers and traders.

### *(ii) Coalition to Diversity Income through Under-Utilised Crops*

The International Centre for Underutilised Crops (ICUC) is piloting this multi-pronged approach in India and Vietnam to promote underused crops by supporting community services for production, post-harvest and marketing of underused crops and improving access to the market for the rural poor. In India it is partnering with the NGO Bharatiya Agro Industries Foundation (BAIF) and in Vietnam with the Centre for Agrarian Systems Research and Development (CASRAD) and the Fruit and Vegetables Research Institute (FAVRI), two national research centres.

### *(iii) Developing Fish Seed Value Chain in Bangladesh*

This initiative, led by the NGO Rangpur Dinajpur Rural Services (RDRS) in Bangladesh, is about developing a fish seed value chain (brood fish producers, fingerling traders and table fish growers) by creating a role for small-holders as intermediary producers and thereby enhancing the availability and quality of fish seed. WorldFish Center and International Development Enterprises are partners in this initiative.

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<sup>12</sup> The PMCA is a research and development approach for fostering pro-poor, market-led innovation in commodity chains, through active participation of private and public market chain actors. CIP's Papa Andina Initiative (<http://papandina.cip.cgiar.org>) and partners began to develop PMCA in 2001 as a means to reduce rural poverty in the Andes by linking small farmers to new market opportunities. The PMCA built on the "Rapid Appraisal of Agricultural Knowledge Systems" (RAAKS) which stimulates networking for innovation (Engel and Salomon, 2003).

### **Cluster 3: Innovation in Natural Resource Management**

#### *(i) Reducing Poverty through Innovation Systems in Forestry*

This initiative, led by Forest Action — a policy think tank NGO in Nepal — focuses on promoting innovations in internal group governance (visioning, hamlet-based planning, decision-making and self-monitoring) among community forest user groups and introducing active forest management and sustainable harvesting technologies, including enterprise development. To implement this initiative, it partners with FECOFUN (Federation of Community Forest Users, Nepal), NEHHPA (Nepal Herbs and Herbal Products Association) and the Nepal Forum of Environmental Journalists (NEEFJ).

#### *(ii) Scaling up IFM through Adaptive Learning Networks*

The Bangladesh Environmental Lawyers Association (BELA) is leading this initiative in collaboration with the Flood Hazard Research Centre (Middlesex University, UK). It focuses on promoting innovations in managing flood plains in Bangladesh. This approach, called Integrated Floodplain Management (IFM), involves participatory action plan development, adaptive learning among stakeholders, development and compliance of rights and developing a legal framework for community-based management of floodplain resources and resource management for fisheries and crop production.

### **Others**

#### *(i) Promoting Sustainable Livelihood Development (Roji Roti)*

This project attempts to reach the ultra-poor in Northern and Eastern India through forming groups of poor women and establishing a sustainable rural support delivery system to support the poor in their efforts to improve their livelihoods. This approach, called the 'dialectic approach' by the project team, relies on group saving as a starting point, which is then followed by access to microfinance and links to inputs, technical expertise and insurance. This project is led by GY Associated Ltd. (GYA), a UK-based consulting company, in collaboration with a Bihar-based NGO CPSL (Centre for Promoting Sustainable Livelihoods), and the ICAR (Indian Council for Agricultural Research) research centre in Patna, India.

*(ii) Rat Management for Rural Communities*

This is an initiative that uses a transfer of technology approach to control rats in Bangladesh. It involves training rural communities and implementing agencies — mainly NGOs and other extension agents — on community-focused and Ecologically-Based Rodent Management (EBRM), all the while producing and distributing improved rat traps. The initiative is led by AID-Comilla, an NGO in Bangladesh, in collaboration with the Bangladesh Agricultural Research Institute (BARI), the Bangladesh Department of Agricultural Extension (DAE) and the Bangladesh Natural Resources Institute.

*(iii) ProSCAB or Promoting Sustainable Coastal Aquaculture in Bangladesh*

This is an initiative for dissemination of 5 coastal fisheries technologies (crab fattening, molluscs culture, seaweed culture, improved fish icing and production of pesticide-free dry fish) through training and enterprise promotion. This initiative is led by the Bangladesh Fisheries Research Forum (BFRF), a professional alliance of researchers and practitioners involved in research, development and commercialisation of the fisheries sector in Bangladesh. The main tasks involved in this initiative are: training, enterprise promotion and establishing links to input and output markets.

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