new technologies are important, these inevitably need to be adapted to local circumstances of application and this in its self will require collaboration with scientific organisations. The flexibility of the scheme seems to help by allowing creative use of the schemes resources. Perhaps this is recognition of the inevitable messiness of putting knowledge into use and the unforeseen obstacles that this process throws up. So while the scheme is certainly concerned with applying technology in rural development, its long term objective and vision is of capacity development. In this context it means both building the skills of the S&T-based NGO’s as well as building their linkages to scientific organisations.

The SMPMA is almost the antithesis of the STARD scheme. It is explicitly focused on technology transfer. It is structured to do so in a way that does not allow for deviation from either the types of technologies to be transferred or the prescribed way of achieving this. It has no focus on building the relationships and linkages that will promote innovation in the future. We don’t have any field based evidence for how well this scheme is performing in terms of introducing IPM technologies to farmers. However, the innovation systems perspective would suggest that this would not be a very effective way of organizing a knowledge-based rural development initiative. In fact, it could learn a lot from the STARD scheme.

### Comparing two government schemes that use science and technology interventions for rural development

<table>
<thead>
<tr>
<th>Key features</th>
<th>STAR(D) Scheme (DST)</th>
<th>SMPMA Scheme (DA&amp;C)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives</strong></td>
<td>To develop S&amp;T capacities and skills in field group/NGOs and to make technological interventions for rural development</td>
<td>To transfer integrated pest management technologies and practices through conventional extension departments and NGOs</td>
</tr>
<tr>
<td><strong>Focus</strong></td>
<td>Generation, dissemination and application of rural technologies and knowledge for rural development</td>
<td>Transfer of IPM approach for selected crops and pests, mainly through demonstration and training programmes</td>
</tr>
<tr>
<td><strong>Technology options</strong></td>
<td>Selected by the NGO receiving Core Support in consultation with the Science and Society Division of Department of Science and Technology</td>
<td>Selected by DA&amp;C and approved by the Directorate of Plant Protection and Quarantine</td>
</tr>
<tr>
<td><strong>Technology choice</strong></td>
<td>A range of technologies developed and adapted by various organizations (including formal S&amp;T organizations, NGOs, rural women, etc.)</td>
<td>20 IPM Package of Practices (PoPs) developed by ICAR/SAUs, Central Directorate of Plant Protection, Pesticide Industries and State Department of Agriculture/Horticulture + 31 new IPM PoPs developed specifically for Horticultural Crops</td>
</tr>
<tr>
<td><strong>Operational flexibility</strong></td>
<td>As approved by the Science and Society Division of DST based on the advice from time to time, of the Advisory Committee constituted for each Core Group supported under the Scheme</td>
<td>As given in the guidelines set by the Directorate of Plant Protection, and monitored by the national Scientific Advisory Panel</td>
</tr>
</tbody>
</table>

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The next edition of the RIPWiG Reporter will focus on the challenges of financing rural innovation Comments and requests to v.sundar@cgiar.org

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### Introduction

This is the first edition of the RIPWiG reporter. Its purpose is to share discussions from a policy dialogue group known as the Rural Innovation Policy Working Group (RIPWiG), an expert advisory group established by UNU-INTECH and its partners in India as part of a DFID-funded research project “New insights into promoting rural innovation: Learning from civil society organizations.”

The mandate of RIPWiG is to facilitate dialogue between the project team and decision makers from Government and civil society organisations with responsibility for planning and implementation of science and technology-based rural development initiatives.

The RIPWiG has so far held two meetings. In the first meeting it advised the project to look at how Government Schemes worked as these are the key public intervention mechanisms in the rural sector. In the second meeting, the Chairperson and other members of the RIPWiG have challenged the project to develop key lessons arising from its work that can help the Government promote rural innovation. (We explain what we mean by rural innovation in four boxes below.)

In this first edition of RIPWiG Reporter, we present a brief overview of two contrasting Government Schemes that seek to promote rural innovation. But first we present the ten commandments of rural innovation, a summary of principles emerging from recent research by the project team.

### What do we mean by rural innovation?

- Rural innovation is not new technology or new information, but the changes that take place in rural areas when knowledge, technology or information is made available and is put into socially and economically productive use.
- Promoting rural innovation is not just about promoting knowledge, technology and information, but about developing the capacity to access, adapt, and apply this knowledge in a particular context.

### Where does knowledge for innovation come from?

- The sources of knowledge needed for innovation come from scientific research organizations, policy making bodies, commercial and development organizations, as well as rural people themselves.
- Using these knowledge sources and bringing about these changes involves people from the full spectrum of public and private, voluntary and commercial sectors in both rural and urban areas.

### The ten commandments of rural innovation

1. **Invention is not always required for innovation.**
   - Invention and innovation are often wrongly thought to mean the same thing. Innovations are things new to the world and are often technological – plants and animals, new varieties, machines and production inputs. Innovation on the other hand refers to the changes that take place when knowledge, information or technologies are put into use in ways that are new in a particular location. This might involve the adoption of new technology; the production of new crops of products; or new processes such as marketing strategies which are more efficient or equitable.

2. **Transferring technology to rural areas does not necessarily promote rural innovation.**
   - Better technologies can help poor people. Technologies can help them transform their lives through innovations in agriculture, health care, transport, energy, rural industry and communication. However simply transferring technology is not the answer. Innovation involves putting together different pieces of knowledge, information and technology in ways that create novelty and change in a particular location. If new technology is simply delivered, innovation will not necessarily take place. Instead technology needs to be integrated with other sources of knowledge – farmers’ knowledge, market knowledge etc. – to allow it to be used in locally relevant ways. New technologies are obviously important, but until they can be put into productive use they can’t be considered innovations.

3. **Inventions created by rural people are not inherently superior to scientists’ inventions.**
   - Recently a lot of attention has been given to inventions created by rural people – often mistakenly called indigenous innovations. Yes, these inventions are suited to the particular locations and socio-economic setting of the rural people that created them, and yes, in those locations these technologies have led to socially beneficial innovations.
However, transferring these same technologies to other rural settings will not necessarily help other poor people who have different needs and contexts. Just as scientifically derived knowledge and technology has to be integrated into different sources of knowledge in a particular location, so too indigenous inventions need to be integrated as part of a complex, physical, and social process that promote innovation. However, what can be transferred across locations is knowledge about how to stimulate the local creativity that can result in innovation. Improving access to and integration of different sources of knowledge, and continuously learning about what knowledge can better be accessed, integrated and made productive. This often requires intuitive skills and local knowledge. In non-rural settings, this may mean that Government schemes rely on providing comprehensive guidelines that can be applied uniformly across a large range of social, economic and political settings by staff without the skills or the mandate to act responsively. This is usually the death knell for replicating successful models. In reality, this can only be achieved by developing new models to develop – one a learning-based approach and the other a prescriptive approach.

4. Capacity development for rural innovation is not the same as training.

Capacity development is often mistakenly thought to be about giving people new skills. That is because innovation is presumed to involve technical training. However, in addition, a major role of innovation involves helping integrate different sources of knowledge. In practice, this means stimulating interaction and learning among different individual and institutional sources of knowledge. Innovation seeking to develop the capacity to innovate therefore need to concentrate on facilitating the development of right kinds of knowledge-based networks relevant to different technological and livelihood options in the rural sector. These networks also need to include policy actors as they have an important role in creating an environment that supports knowledge use and innovation.

5. Even though the Government has successful science and technology-based rural development schemes, rural innovation, it falls to learn lessons from these.

Long ago, the corporate sector realised that how learning to make and sell products more effectively was a sure route to the innovations needed for business success. Rural development and the rural innovations needed to drive them forward would not be as easy. Learning how to make better use of knowledge is just as important for the rural development sector as it is for the corporate sector. Unlike the corporate sector, where science and technology and rural development programmes can continue whether they learn how to exploit knowledge in one way or another, there is no such option for some Government programmes have been very successful in supporting the development of good networks of knowledge producers and intermediaries and users needed to promote rural innovation. It is time the Government started to actively learn from its own triumphs.

6. NGO's are donors of knowledge about how to approach rural innovation.

The great thing about NGO’s is that they can try out new ways of working that can adapt mid-course when things go wrong. This turns out to be a perfect strategy for trying to workout how to connect the different players and pieces of knowledge needed to bring about innovation in the messy rural sector. This often involves ways of working that could never be dreamt of in a government organisation. As a result, NGO’s are a rich source of inspiration on different working practices that could guide others pursuing knowledge-based development. While government people are rarely aware of lessons that can be learnt from NGO’s, these NGOS themselves also devote little energy to documenting and promoting lessons.

7. Convergence of rural innovation into Government schemes kills them.

Developing dense networks of knowledge producers and users, and integrating innovation into messy rural business of trial and error. There is no set formula, only broad principles. Successful models have their own dynamics, often flexibly responding to changing opportunities and contexts and continuously learning how knowledge can better be accessed, integrated and made productive. This often requires intuitive skills and local knowledge in non-rural settings. In rural settings, this may mean that Government schemes rely on providing comprehensive guidelines that can be applied uniformly across a large range of social, economic and political settings by staff without the skills or the mandate to act responsively. This is usually the death knell for replicating successful models. In reality, this can only be achieved by developing new models to develop – one a learning-based approach and the other a prescriptive approach.

8. Participatory technology development with the poor is not enough to promote rural innovation.

Participatory technology development was once thought to be the answer to the rural innovation conundrum. Often misinterpreted by practitioners, this promising approach ended up trying to make poor people’s knowledge more important than that of outsiders. Too often, the promise was that poor people were best suited to designing their own problems (often true, but not always) and developing solutions to solve their own problems (rarely true). It was certainly necessary to recognise the poor as an important source of knowledge in a particular location, however, the poor are required to bring about rural innovation. This is an important distinction. Policy makers and practitioners have a responsibility to ensure that the poor are not placed above all other sources of knowledge, which, together with the knowledge held by the poor, are required to bring about rural innovation. The challenge is how to integrate these different sources in socially inclusive ways, and not placing individual sources and methods on pedestals!

9. Pro-poor rural innovation requires collaboration with all the traditional enemies of the poor.

In the past, market intermediaries, the private sector, financial institutions and even government interventions were often seen as the enemies of the poor. It is now becoming ever more apparent that not only do all these actors play an important role in the rural economy, if managed properly, but they can also be active and important sources of knowledge and resources needed to promote rural innovation. Of course, the poor can do nothing without their participation. The task for development is to find the incentives and penalties to encourage collaboration rather than exploitation. This means some adjustments to the development agencies and policy makers that will need to work with them.

10. Rural innovation does not need new investments, but new ways of working.

It is easy to throw more money at difficult problems like rural innovation and poverty reduction. It is much more difficult to change the way government programmes, NGO’s, research organisations and other work. This concerns everything from the rules of government schemes; how research priorities are set; rules governing professional advancement; the functioning of funding arrangements; and much more. Yet it is all too clear that collectively the development system does not have a responsibility to explore how knowledge can be used more effectively in the process of rural innovation, identifying which working practices are most effective and then changing the challenges of not just doing the right thing, but doing the thing in the right way and continuously assessing how well its been done.

Principles of innovation systems thinking

Innovation is a process of not only creating knowledge, but also making this knowledge available and putting it into use. This can be done by working with different sources of knowledge held by scientists, entrepreneurs, farmers, rural artisans, development practitioners and policy organisations.

• The process of innovation relies on interaction between these different sources of knowledge. Developing these networks of diverse stakeholders is central to promoting innovation.

• The working practices – or institutions – of different organisations determine the extent to which they can engage in interactive processes.

• The wider policy and institutional environment also shapes this process through the incentives and norms that it exerts. Creating the right institutional setting is essential if innovation networks are to be effective.

• Organisations through their interaction with others and with the wider environment (policies, markets, technology, and society) learn and change. These changes lead to new ways of working and in this way new capacities to innovate build-up incrementally over time.

A major element of these process interventions involves the NGO developing links with R&D organisations. While the programme seeks to strengthen the capacity of selected NGO to link with R&D organisations, the development of linkages with the science base is also seen as part of the task of creating this capacity. Over the past two decades, the Scheme has financed 28 NGOs for periods ranging from 5 to 15 years.

Scheme II: The Scheme for Strengthening and Modernization of Pest Management Approach in India (SMPMA) of the Department of Agriculture 
& Cooperatives (DA&C) provides support for popularizing the Integrated Pest Management (IPM) approach among the farming community. The initiative, initiated in 1992 as the Scheme for Promotion of IPM in India, operates through 31 Integrated Pest Management Centres (IPMCCs) located in various States. The IPMCCs conduct several activities: for example, regular pest surveillance and monitoring; research projects; research on developing and multiplying bio-control agents; conservation and promotion of naturally occurring bio agents and bio pesticides; development of human resources in IPM; training extension workers, farmers (through Farmer Field Schools (FFS)); and training pesticide dealers, NGOs, private entrepreneurs, graduates, etc. The Scheme sets targets for number of and crops for demo-cum-training programmes each year. Since 2002-03, the role of NGOs in these training programmes, both as trainees and trainers has been enhanced. From 1994-05 through to 2004-05 the Scheme conducted 9,111 FFS and training of 32,188 Agricultural Extension officers and 23,443 farmers.

From this review of the two schemes it can’t be said which one is performing better than the other, at least not in the sense impact on rural development indicators. But from the perspective of the innovation process, it can be seen that one scheme – SMPMA – embodies many of the principles that this perspective would value. It focuses a lot of its attention on strengthening NGO’s and R&D organisations and helping to link and network them with scientific organisations. The Scheme recognises that while