

New mechanisms for reinforcing partnerships in Agroecology/Natural resources management Research and Development

Concept paper for the GFAR¹

1. Rationale : NRM research starts from local scale

The reinforcement of research and development in agroecology and natural resource management (AE/NRM R&D) is one of the key priorities for agricultural research and development worldwide. It becomes especially important when targeting resource-poor farmers in fragile ecosystems of tropical countries, those who have been passed over by the “Green Revolution”.

An important feature of AE/NRM R&D strategies is the recognition of the importance of local knowledge and experience in any strategy of "sustainable intensification" of smallholder agriculture. Another important feature is the fact that NRM and agro-ecological “success stories” are often site-specific, given the complexity and diversity of agro-ecosystems in space and time.

The corollary of this recognition is that research planning must be much more "bottom-up" than "top-down", based on promising local experiments (“success stories”) and practices actually applied by farmers, which R&D efforts should aim to reinforce and document in an analytical way. Not only the biophysical but also the socio-economic and politico-institutional context of the innovation need to be made clear. Research projects should also contribute to defining how wide the dissemination of such innovations could be (“recommendation domains”), encourage adaptation to different contexts, and promote further innovation and experimentation, where appropriate. AE/NRM R&D organisations should critically examine the technical approaches promoted by scientific institutions, even if they claim that their approaches are interdisciplinary and holistic.

AE/NRM R&D is, as the term implies, oriented to action in developing more sustainable forms of natural resource use. The action for improvement will ultimately be taken by the resource users themselves. These people, and the farmer organisations, NGOs and private bodies concerned with them, have a particularly important contribution to make in recognising and critically analysing promising innovations, together with other partners in R&D .

Individual practices and collective management of resources

The objective of AE/NRM R&D programs should be, in the first instance, to identify, encourage and diffuse concrete innovations by farmers in managing natural resources.

Most of these innovations fall into two broad categories:

¹ *Based on the discussions of the GFAR - NRM workshop held in Rambouillet, December 1999. Produced by the Rambouillet Steering group (Mutizwa Mukute, Yang Saing Koma, Luis Guerrero, Jean Marc von der Weid, Ann Waters Bayer, John Farrington, Frans Neuman), with additional comments from Christian Castellanet, Marijke Kuipers and Oliver Oliveros*

- **bio-technical practices** at the farm-family level in the areas of crop farming, forestry, animal husbandry, fisheries etc. This is the most common target of most agricultural research centres (ARCs), especially the commodity-based ones;
- **collective mechanisms of managing** and controlling common property resources and ecosystems. The importance of this topic has been understood more recently, and is given more consideration by ARCs working on broad agro-ecosystem approaches or on policy issues, such as CIFOR or ILRI.

In the context of sustainable resource use, the first category can be described as *agroecological innovation*; as it aims at integrating the various components of the farming systems and optimising the management of external inputs in a given agro-ecosystem³.

The second category is that of *institutional innovation*, as it concerns the collective management of natural resources such as soils and water within ecosystems. Community forestry and common management of pastures and fishing grounds also belong to this category. Innovation in this field is strongly linked to participatory methods and public policies. Research is needed to identify the most efficient mechanisms to sustain management of these resources at the most decentralised level, and to understand how conflicts arise or are solved. This includes stakeholder analysis and understanding how public policies, e.g. land and natural resources legislation, do or do not support local arrangements.

Obviously, the boundary between these two categories is not clear cut. Between them, there are large areas of overlap, where they can hardly be separated. Some examples are:

- *Integrated Pest Management (IPM). Depending on the type of "pest", some aspects of IPM can be practised at the farm level, whereas others need to involve some degree of collective organisation at a larger geographic and social scale;*
- *Soil fertility management and agroforestry innovations are generally rooted at the farm level, but their extension often depends on collective measures concerning grazing rules and fire control at the community level, and also depend on access and usufruct rights to land and trees;*
- *Close integration of crops, livestock and forestry can be sought, in some cases, at farm level, but often involves agreements between more specialised producers (e.g. arable farmers and transhumant pastoralists) and a mixture of new techniques and rules for managing collective goods;*
- *Generating economic value from natural produce (e.g. medicinal plants in forests, resins, wildlife), which helps to maintain biodiversity, can also be sought, in some cases, at the individual level, but generally involves the use of common lands and forests and some form of collective action in marketing.*

Taking into account the variability of local environments and the action orientation of AE/NRM R&D, work in this field must be based on the dynamics of local innovation by land users and not on a "top-down" approach.

Land users and support organisations also need to gain a better comprehension of both the dynamics of a given innovation and its impact on natural resources and social equity. By analysing the conditions of a change⁴ and its foreseeable consequences, such research will help to evaluate the extension potential of an innovation in a given micro-region, but also on the scale of the larger

³ Agroecology is an integrating science which makes it possible to master flows of energy, information and matter within agroecosystems and to optimise the "outputs", while minimising the external inputs and the mining of the natural resources capital. The agroecological approach allows new methodologies of integrating the various biophysical disciplines of agronomy, forestry, livestock husbandry, soil science, etc., which have been compartmentalised in conventional research.

⁴ The criteria that determine whether a farmer chooses or declines a certain innovation

agro-ecological zone to which this micro-region belongs, and to which such an innovation can be adapted. Such a mechanism will contribute to supporting a process of “scaling up” in the sense of extending the application of the innovation.

2. Proposal of concrete mechanisms for launching an international program

In view of the urgent need for action to support and spread successful local-level initiatives in AE/NRM, some concrete mechanisms are proposed that could permit a quick launching of an international program of cooperation.

The overall aim is to stimulate **the identification, reinforcement and scaling up of local initiatives** which lead to innovations and concrete positive changes in the field of AE/NRM, with a view to sustainable development⁵.

Three mechanisms (or programs) are proposed to reach this objective:

- The first one concerns the *identification and promotion of local innovations*,
- the second one concerns *the management of the information* resulting from the first, and
- the third one concerns the *policy issues and questions* that are raised by such innovations.

2.1 Identification and promotion of local innovations in ecological agriculture and natural resource management (Prolinnova).

The objective of Prolinnova is *to strengthen research on promoting farmer innovation in agroecology and NRM* through partnerships of farmers, NGOs and research organisations at various levels (from local to global, including national/regional).

Four main fields of activities and partnerships (each of them could be regarded as a sub-initiative) have been identified within Prolinnova:

*(i) The first one concerns the **identification, support, and scaling up of local innovations at the local/ national/ regional level***

Greater co-operation between NGOs, farmer organisations, researchers and government agencies will be encouraged in order 1) to launch “scaling-up” programs based on the recognition of valuable farmer-based innovations, 2) to evaluate their potential and limits (type of farmers involved, bio-physical and socio-economical environment) and 3) to co-ordinate programs for disseminating and adapting these innovations to a larger array of farmers.

This is aimed at spreading the innovations more widely (horizontal “scaling up”) within the agro-ecological zone. This would be the object of revised “ecoregional approaches”, based on concrete innovations and ending in large-scale diffusion, in other words, “farmer-to-farmer” scaling up⁶. These approaches should endeavour to draw in the attention of policy makers (including funding agencies) and government services (besides the other stakeholders already cited) in order to create a conducive institutional and policy environment for wider application of the innovations.

⁵ See recommendations of the “NRM and Agro-Ecology consultation”, organised by the NGO Committee of the CGIAR in November 1998 in Washington D.C.

⁶ In principle, the current “ecoregional” approaches of the CGIAR should contribute to this goal. However, it is important to insist on the change of perspective implied by this proposal: the ecoregional approach should come after (in concrete and priority sense) the identification and support to local innovations, and its objective should be to support their diffusion, and not, as it happens too often, to build up a large research program which is centred on modelling tools and which is implemented before “new” innovations are proposed and tested.

(ii) The second sub-initiative addresses the need to strengthen global exchange and analysis of processes and methods for participatory AE/NRM research

Conventional analytical, disciplinary and determinist approaches in agricultural research are not adapted to the questions raised by AE/NRM innovations. Participatory methods and integrated and systemic approaches are needed. Furthermore, scientists must learn to deal with research under complex real-life conditions, with a certain level of uncertainty. Therefore, there is a need for systematic documentation of the processes and methods used in: 1) investigating local innovation in AE/NRM, 2) collaborating with local resource users in adaptation and further development of innovations, and 3) participatory monitoring and evaluation of innovations, of their further development and of their impact. Comparative analysis of these processes and methods will be made at global level.

(iii) The third sub-initiative, which is closely linked to the second one, concerns the need for training of researchers in these new approaches

Given the fact that more than 90 % of present agricultural researchers have been trained according to the conventional disciplinary, analytical and top-down paradigm, the adjustment to basing their research program on local innovations and initiatives will be extremely difficult unless they have access to appropriate continuous programs of training and coaching in integrated approaches to AE/NRM, including recent work on common property resources, environmental negotiation, participatory methods, etc.

Obviously, extensionists and community development workers would also benefit of such programs.

(iv) The fourth sub-initiative is the promotion of regional and global research networks on AE/NRM based on local innovations.

This will, in part, grow out of the foregoing, and could include electronic discussions and face-to-face workshops to exchange information and analyse experiences related to local innovation and supportive research in similar agroecological zones or on similar types of biotechnical or institutional innovations.

Identification and classification of successful local innovations

The main problem will be the selection and analysis of real “success stories”. The grey (and not so grey) literature is full of promising initiatives and projects in the field of agriculture and NRM with resource-poor farmers, of encouraging successes in introducing innovations tested on a small scale and under undescribed conditions (in terms of technical and economical assistance, in particular) which are never heard of again. This “postcard syndrome” is quite common in NGOs and research organisations alike. It is therefore essential to verify the innovations that have been documented. An important (but not unique) criterion for the potential success of an innovation is the fact that at least some farmers are adopting or adapting them without external assistance, as a result of farmer-to-farmer contact.

Another topic that must be addressed is the usefulness of analysis that document negative dynamics of an innovation. When properly analysed and documented, such cases can also bring important information about the conditions for expansion of a given innovation; they are therefore complementary to “success stories”. Agricultural development is largely based on trial and error; it is healthy to recognise the errors in order to avoid excessive optimism, to counteract the “postcard syndrome”, and to overcome institutional censorship of unsuccessful R/D programs.

As a tool for scaling up, all the local innovations identified will be classified according to certain criteria, including *agro-socio-ecological zone* and *types of innovation*, and will be fed into a database by local and regional partners. The information will be entered according to a given format

and checked for quality (INTERDEV, see below). A given innovation will be characterised according to locality, farmer group(s) involved, institutional context (support organisations, research and extension services, farmer organisations, legal framework) and socio-political context (infrastructure, markets, agricultural policy, land tenure and NR policy).

The description of relevant *agro-socio-ecological zones* and of *relevant types of AE/NRM innovations* will remain flexible, so that the classification can be adapted to concrete innovations and scaling-up processes that are documented, and not vice versa. Therefore, Prolinnova will start with a preliminary classification, which will be periodically revised, based on the information received on actual innovations.

Horizontal scaling up in terms of research

The discussion on possibilities of "scaling up" will be carried out horizontally by all the partners within a given agro-ecological zone⁷. Conditions of transition⁸ of the characteristic agrarian and forestry systems will be studied, and especially the combination of technologies and policies which can favour these changes. Concrete exchanges of stakeholders between similar or different stakeholders (from farmers to farmers, policy makers to policy makers or farmers to policy makers) will be promoted between areas linked by common conditions, questions and/or solutions (for example, integration of successful agroforestry initiatives from a specific micro-region in the Sahel into another Sahelian micro-region where advances on pasture management have been made).

Vertical scaling up in terms of research

The other form of scaling up in the sense of exchange will be "vertical", that is to say, for a given topic (for example, "IPM", soil fertility management" or "communal pasture management"), the methods and results of innovation and of efforts to promote innovation will be compared between different agro-ecosystems⁹. This would involve also the fields of commodity-based biotechnical research and methodological debate¹⁰.

2.2 Global information system (INTERDEV)

The success of scaling up depends on appropriate mechanisms for the description, validation, classification and exchange of information, and should involve networks of organisations (with critical cross-control) rather than a centralised system.

This is the proposed general objective of the InterDev information system, a mutual and cooperative service presently being tested by a network of organisations, who themselves provide expertise in research and development projects and NRM-related activities.

These organisations are developing an information system in which they themselves enter information, in order to share their experiences and knowledge, and make this accessible through the Web to any organisation working in the same domain: the sustainable management of natural resources.

⁷ Horizontal scaling up will allow comparisons *between* various innovations *within* a specific agroecological zone. It will highlight the reasons why a specific innovation is adapted to local circumstances (i.e. due to criteria that have not been considered in the agroecological classification : types of farming systems, socio-political constraints, etc...).

⁸ Changes in the systems allowing them to overcome their limitations and crises as regards Natural Resources Management

⁹ Vertical scaling up will allow comparisons *between* various agroecological zones *within* the frame of a specific innovation. It will highlight the agroecological criterias for which a specific innovation is adopted.

¹⁰ An initiative of this type is presently being developed by a set of partners including CIMMYT, CIRAD, local NGOs and NARS on the issue of "permanent cover - no tillage cropping systems". Similar initiatives of this type on other topics could be organised on matters of shared interest between several organisations...

Questions to be considered include: How to define a project on Natural Resources Management at the local level? Who has already tried this and how can I get in touch with him/her? What were the results and the main problems faced? Where can I find the necessary equipment? Who can provide technical support?

InterDev is designed so that the central database can be downloaded by any participating organisation, *enriched by its own experience and automatically updated* every time the participating organisation makes a new connection. Thus, the users of the information are, at the same time, the main suppliers.

Rationale of the initiative

Although there are today numerous services providing access to scientific databases, and even more numerous services on the field level working with practically-oriented information and comparable databases, there is hardly any cooperation between the different network levels. The scientific database services rarely provide answers for practical and operational problems that development-support organisations, not-for-profit groups or small-scale entrepreneurs meet in the field. The knowledge gathered on the operational level is rarely used as a basis for scientific research.

The Interdev information service can help overcome such *lack of communication* and *mutual ignorance* between “*global and universal*” knowledge, which is based on science and world-wide valid knowledge, and “*operational*” knowledge, which is demand-driven, action-oriented, with bottom-up information on innovations, validated by their effective use, and based on local wisdom and farmers own experimentation and practical experience.

An experimental phase up to mid-2001

After an initial experimental phase (up to June 2001), the service will be run by *a much larger number of participating organisations*, equally committed to filling in and using the database. Studies are now underway for the future expansion of the information service in terms of both the number of organisations participating and the themes covered.

From the time of its launching in 1999, the development of the service has required the definition of norms and procedures for managing the information on a co-operative basis, which fully meets the criteria described for the *Prolinnova* initiative. This having been done, the system is now being tested while concentrating on three specific issues particularly relevant to NRM:

- ▷ agroecological farming systems,
- ▷ generating economic value from natural products, agroprocessing and quality control,
- ▷ urban and periurban agriculture.

These issues have been selected after consultation with a large number of organisations throughout the world. They are among the 12 topics listed as priority fields of interest by the Natural Resource Management Workshop held during the European Forum for Agricultural Research held in April 1999 in Wageningen, The Netherlands.

Strategies for the extension of partnerships and themes to larger partnerships and issues will be assessed by the Interdev -SC before June 2001.

The institutional and financial sustainability of the service in the long run

For the experimental phase up to June 2001, the service will rely on the responsibility of the consortium of its initial promoters, so that flexibility and openness can be ensured. The initial Steering Committee has been enlarged following the recommendations of the Rambouillet GFAR-NRM workshop held in December 1999, which brought together organisations from various

countries in the North and South. The Global Forum venue itself will give an opportunity to launch a call for additional partnerships, which may involve NGOs, regional constituencies or international ARCs. Training sessions will be organised for the participating organisations in the second half of 2000.

After 2001, the question of the institutional basis on which the service could rely will be raised. A proposal currently being considered is to connect the service to the "*knowledge market places*" proposed by the NARS Secretariat under the general umbrella of the Electronic Global Forum (EGFAR), provided that decentralised management and responsibilities can be sustained, if experimentation during the initial phase proves successful.

2.3 Policy research network (PolicyNet)

An important factor for the success of the scaling up and wide adoption of NRM and agro-ecological innovations is the setting of appropriate policies which will encourage and support these local innovations, whether in the legal framework (as often is the case for legislation on common property resources) or in the provision of credit, inputs, infrastructure, and organisation of extension and farmers' training. Policy research should also aim at advocating the role of small farmers and farmers organisation or community organisation in socio-economic development and sustainable management of Natural Resources ?

The underlying principle of PolicyNet is that agriculture is "multifunctional" in the sense that its benefits cannot be summarised in a single financial or economic equation. In addition to the economic dimensions, small producers will, for instance, benefit more (or less) from the management of agricultural resources according to whether their access to resources is made more (or less) secure, and according to whether they are able to reduce the risks associated with agriculture (or face increasing risks). There are also strong cultural values associated with many aspects of agriculture.

PolicyNet has three broad objectives :

1. To conduct research in order to develop options for policy improvement at local, national and international levels. It will make these findings available in appropriate form both to those responsible for policy and to other partners or other organisations having an interest in policy reform
2. To conduct such research collaboratively with partners in ways that reinforce their own skills. The identification of research topics and methods will be strongly influenced by priorities perceived by South-based partners.
3. Where appropriate, to put South-based interest groups in contact with policy research organisations located outside the PolicyNet, but capable of responding to their request in a manner consistent with the objectives of the network.

Initially, PolicyNet would focus on the **institutional and political conditions of emergence and extension of innovations on NRM.**

It would adopt an iterative process for designing policy options, starting from field-based information on the innovations and their context and limitations in terms of policies, towards debate with policy makers, and back to local actors. Its research would therefore be built progressively to address demand-driven issues.

A call for partnerships on the issue of *Political and institutional conditions for innovation in NRM*, will be launched in Dresden in May 2000.

3. Linkages between the three initiatives

Interdev is seen as pivotal in the global mechanism linking the three initiatives. Interdev generates information from local initiatives and innovations in the field of NRM. It will classify and organise information on local innovation that is obtained from Prolinnova, especially from the sub-initiative dealing with the identification, promotion and scaling up of local innovations.

Taking into account the two other initiatives, InterDev will propose rules to characterise and select relevant information and mobilise resources to keep the whole system fed with information. It will also disseminate the information among various stakeholders and the information will then be recycled and processed for the purpose of research on NRM, training of researchers and other stakeholders, and research on policies affecting NRM.

Prolinnova is both an important provider of information on local innovations (through its first sub-initiative) and a user of Interdev information (through its three other components at the macro-level, on training, research methodologies and global research networks).

Reversedly, PolicyNet and Prolinnova can feed information on their results into the system and Interdev can disseminate this feedback to end-users.

This mechanism is totally open once the objectives, methods, expected results and characteristics of partners are clarified.