19 Lessons for out-scaling and up-scaling from *Poverty measurement, mapping and analysis*

Background

Research Into Use clearly anticipates that poverty mapping will be a pre-requisite for putting tried and tested research results into use[62]. Poverty can be defined, measured and analysed in many different ways and the Renewable Natural Resources Research Strategy Programmes (RNRRS) expected to be able to use existing measures and analyses by other agencies that had a comparative advantage in this work (Box 19.1).

Box 19.1

Measuring, mapping and analysing poverty. Who has the comparative advantage?

The Renewable Natural Resources Research Strategy programmes were not originally designed in 1994 to carry out their own poverty analysis. The expectation was that other institutions and organisations had a more direct mandate to carry out this type of work and had a comparative advantage in doing so. Generally, RNRRS programmes were expected to utilise the tools and results generated by others. This is particularly the case with poverty measurement.[63]

But, the programmes found that none of the existing measures or analyses met their specific needs. So, several programmes devised ways to define poverty and groups of the poor, mainly to target and prioritise research that would reduce poverty. They found that the information they considered crucial for defining and measuring poverty was usually missing. And, looking at their results, they concluded that their methods gave indicative rather than definitive results. Despite this, they regarded poverty mapping as essential, particularly for the uptake of research outputs.

The most comprehensive work on poverty mapping to identify pro-poor research has been done for poor livestock farmers, particularly in East and South Africa, and South Asia. This work may indicate possible target populations for research outputs relating to livestock.

Key points

- Poverty maps indicate where research outputs aimed at specific groups of poor *might* be targeted.
- Existing studies do not show where poor people, and the enabling environments for uptake of research outputs, coexist.
- Understanding of the links between poverty and natural resources is limited.
- There are no 'wonder' solutions to reducing poverty. Baskets of options to meet multiple livelihood needs of a particular group of poor people are the most promising.
- Participatory stakeholder analysis may help in defining poverty and the poor, in order to aid the uptake of research.
- Useful tools have been developed to manipulate poverty data and offer decision making options.

Lessons learned

Poverty maps indicate where research outputs aimed at specific groups of poor *might* be targeted. The accuracy of poverty maps, whether at global or local scales, depends very much on the data on which they are based[64]. For many developing countries data is inadequate, sparse or unreliable. Often, proxies and extrapolation are used rather than actual data[65]. Nevertheless, these indicative estimates of poverty are clearly a valuable starting point for locating poor populations. But, targeting outputs from natural resources research to reduce poverty in certain groups needs maps at high resolution rather than global-level analyses (Box 19.2).

The International Livestock Research Institute used existing data, information from the literature and expert opinion to produce maps showing the global distribution of poor livestock owners. But, they found that to analyse poverty and its causes and to find out what kinds of research outputs on livestock issues might improve the

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[62] RIU Implementation Plan August 2007 "The common goal of the coalitions and partnerships will be to get new research outputs adopted widely but using processes that ultimately empower and incentivise users to express demand for research outputs, and strengthen the capacities and incentive structures of public and private institutions through which knowledge is transmitted (and demanded) within national systems of agricultural and natural resource innovation. In our selection of initiatives under this component poverty mapping will be undertaken".

[63] Page 2. Poverty Mapping and Analysis: An RNRRS Synthesis

[64] Page 4, Poverty mapping and analysis: An RNRRS Synthesis. "In order to develop an accurate computerized model it proved essential that poverty criteria and indicators be well measured. …if the baseline data is incorrect, then it follows that any analysis and predictors will consequently be too inaccurate to prove useful."

[65] "The DHS (Kenya Demographic and Health Survey) collects information on important dimensions of human well-being, including housing characteristics, households assets, household-member characteristics, high-risk births and family planning, early childhood mortality, child nutrition and school enrolment. Though the DHS does not collect any information on household consumption or income, recent research has demonstrated the value of a household-assets index that can be used as a proxy measure for socio-economic status in the absence of income or consumption data (Gwatkin et al., 2000)." From Thornton, P.K., Kruska, R.K., Henninger, N., Kristjanson, P.M., Reid, R.S., Atieno, F., Odero, A. and Ndegwa, T. 2002. Mapping poverty and livestock in developing countries. International Livestock Research Institute (ILRI): Nairobi, Kenya.

lives of the poor, they needed information that was geographically disaggregated. So, they produced a more detailed map of livestock and poverty in East Africa. Even then, they found that, with the data they had, their maps showed the poor in agriculture, rather than specifically poor livestock farmers. Because aggregate national level indicators often hide important differences between areas or regions, additional analyses would be needed (Box 19.3) to identify the exact locations of poor livestock farmers.

Box 19.2

There is no substitute for high-resolution poverty maps to target poverty reduction
"Despite the caveats we give concerning our map classifications … and the sometimes heroic nature of the assumptions that we have had to make because of data gaps, global-level analyses can effectively identify foci where research and development activities aimed at specific communities or groups of people might profitably be targeted. At higher resolutions, where highly effective targeting is required, there is no substitute for high-resolution poverty mapping approaches, and to be most effective these might be based on small-area estimation. This approach to poverty mapping, which links national census data with household survey data, is under way for East Africa."[66]

Box 19.3

Disaggregated information shows important differences between areas or regions
In Kenya, the poorest districts generally correspond to those with the lowest milk production per person. A map of annual per capita milk production across districts shows that in western Kenya there are striking contrasts in milk output between districts with the same production systems. For example, Nandi District produces more than 10 times as much (497 kg/person) as the neighbouring districts of Kakamega, Kisumu and Vihiga (27-38 kg/person).

The International Livestock Research Institute considered that the key ingredients for high-resolution maps of poor livestock farmers would be geographically disaggregated basic information on the following: the spatial and temporal distribution of crops and livestock; the numbers, location and characteristics of the poor; and the numbers, location and characteristics of highly vulnerable poor livestock keepers. Despite the crucial importance of such information, existing databases are, by and large, very patchy and incomplete.

Similarly, in Nepal, the Forestry Research Programme found that there were no reliable regional or global sources of data on forest-dependent poor people[67]. The Programme had to use indirect methods and surveys and, at the local level, had to rely on the recommendations of individual research projects to identify the poor and their priority problems. And, because the timeframe for the poverty survey was short and data sources were limited, the Programme considered that its findings could only be indicative.

So, databases of crucial information for mapping poverty to target uptake of research to reduce poverty are unlikely to exist. Plus, there are no current studies at country, regional or smaller scales that quantify rates of poverty among and within different production systems.

Existing studies do not show where poor people, and the enabling environments for uptake of research outputs, coexist. Programmes also considered that, in addition to high-resolution poverty maps, mapping variables that indicate whether the 'enabling environment' is favourable or not would also be important for uptake of research outputs.

There will most probably be circumstances where uptake of particular research findings will make very little difference (Box 19.4). However, in other circumstances the same research findings may have very good chance of making a lasting positive change. What has not yet been done is to put the characteristics of the poor together with the characteristics of their environment to pinpoint where any particular set of research findings has the greatest chance of reducing poverty.

Box 19.4

The problems of the poor relate to power, hierarchy, subordination and exploitation
"The problems prioritised by the focus groups and service providers in this survey do not fall easily under the researchable constraints of a forestry programme. They are more fundamental, and relate to power, hierarchy, subordination and exploitation. … How the structures of resource access that are historically rooted in class distinctions that distort even well intentioned policies in practice, can be transformed to provide equity for the poor, is yet to be seen. The community forestry programmes in Nepal have led to some—but not sufficient—reform. Research may usefully be redirected to understanding when and how the poor can take better control of the development and democratization processes in the country."[68]

[66] Thornton et al. (2002). According to this report, preliminary high-resolution poverty maps for Kenya, Tanzania and Uganda were completed in 2002. IFPRI was engaged in producing similar maps for Mozambique and Malawi, as well as the maps that were completed in 2000 in South Africa, giving reasonable coverage of East and Southern Africa.

[67] Page 5, Poverty mapping and analysis: An RNRRS Synthesis
[68] Page 40, A survey of the priority problems of the forest and tree-dependent poor people in Nepal during a time of conflict. Caught in the cross-fire. An Update Report, 2005, by Bal Krishna Kattel, Krishna Paudel and Hemant Ojha (ForestAction, Nepal), in collaboration with Neil Bird, DFID Forestry Research Programme (FRP) UK, December 2005. Kathmandu and East Malling.

The Aquaculture and Fish Genetics Research Programme went so far as to argue that only by studying issues such as "power, hierarchy and social inclusion" before embarking on a project would it be possible to identify whether the preconditions for successful dissemination and uptake of the research were in place and whether the research outputs would address "real rather than perceived needs".[69]

DFID's adoption of the 'enabling/inclusive/focussed' categories of research rather than the 'basic/strategic/applied/adaptive' categories acknowledged that most obstacles to development are not technological but are rooted in policies and institutions and need a high-level and often political response. Thus, RIU, as well as mapping poverty characteristics, will need to find ways to overlay policy and institutional obstacles.

The International Livestock Research Institute (ILRI) Targeting Project didn't take policy and institutional obstacles into account when it set out to offer donors pro-poor livestock research investment options. There was no consideration of broader financial and socio-political contexts although ILRI emphasised that whether or not the options selected would have an impact would depend on there being appropriate 'enabling circumstances'. But, the reality is that conditions in most developing countries are unlikely to be enabling in the near future. This means that identifying where enabling conditions correspond with poverty that can be addressed by existing research outputs is going to be important for successful uptake.

Understanding of the links between poverty and natural resources is limited. The spatial relationships between poverty and poor or degraded natural resources are not yet clear. Analyses of, for example, poverty and soil degradation have not yet been made. The ILRI study points out that combining poverty with vulnerability might be valuable. Some groups of poor people may be more vulnerable than others to climatic and political shocks, such as drought and revolution. ILRI gives the example of pastoralists who live in areas with 300 mm of reliable annual rainfall. This group may be less vulnerable to shocks than pastoralists who live in areas with similar but highly erratic and unreliable rainfall.

There are no 'wonder' solutions to reducing poverty. Baskets of options to meet multiple livelihood needs of a particular group of poor people are the most promising. One lesson learned from the ILRI project was that there are "no wonder livestock research solutions that … can have a huge impact on poor people". While ILRI found this disappointing, they

also acknowledged that the conclusion was realistic and proved the value of the process.

The lesson that there are no wonder solutions that livestock research alone can deliver underlines the need to analyse the multiple livelihood needs of a particular group of poor people and put together packages of outputs to meet these needs[70]. Programmes repeatedly called for holistic approaches integrating social and scientific issues, such as land and water management and socioeconomics and hydrology, particularly when it comes to implementing project findings[71].

An Aquaculture and Fish Genetics Research Programme collaboration with CARE in Sri Lanka on fish culture learned that an effective way to increase the uptake of research findings was to provide a basket of options for the poor to choose from. One example was combining water retention structures for fish culture with other uses for the water such as small-scale brick making. This suggests that collaborating with action-oriented agencies whose primary concern is development of poor rural communities, such as CARE[72], could be productive. Putting together combinations of research outputs that complement each other and offering a basket of research outputs to meet differing needs, rather than a single solution, may also increase the uptake of research findings.

In view of these experiences, programmes also proposed that, for direct impact on the poor, work to increase the uptake of research outputs should be 'nested' within local partners' development programmes and existing national and international strategies. This would get round the problem presented by the incompatible timeframes of short research programmes and the often long timeframes of development. Both these suggestions align with the innovations systems approach.

Participatory stakeholder analysis may help in defining poverty and the poor, in order to aid the uptake of research. There is no agreed international definition or measure of poverty. Poverty is multi-dimensional but there is no single indicator to measure all the dimensions simultaneously. And, as the International Livestock Research Institute learned in its Targeting Project for livestock research[73], there is no consensus on appropriate data or any agreed action plan to collect baseline data.

In Sri Lanka, the Aquaculture and Fish Genetics Research Programme learned that it was difficult to define their target group of poor people. The poor engaged in a variety of activities outside the market economy in order to survive. These types of subsistence activities more often than not fall outside statistical data collection nets. So, in this case, defining the 'poor' (towards whom the work to increase uptake of research findings needed to be directed) presented challenges.

Despite these problems, and though they used different tools, both livestock and forestry programmes concluded that poverty analysis was important for the uptake of research outputs.

Participatory stakeholder analysis may be a way to take into account multiple perspectives of poverty. So, it may be a promising approach for the uptake of research outputs through national

[69] Page 6, Poverty mapping and analysis: An RNRRS Synthesis
[70] Page 6, Poverty mapping and analysis: An RNRRS Synthesis
[71] Page 6, Poverty mapping and analysis: An RNRRS Synthesis
[72] The Forestry Research Programme and Crop Post Harvest Programme emphasised that key elements in poverty alleviation are developing markets, and developing producers' marketing and entrepreneurial skills. To do these things, RIU could consider partnering with organisations such as CARE. "VegCARE … A company set up jointly by CARE and a Kenyan company, … advises small farmers on how to grow vegetables that meet supermarket standards, buys them and then sells them on to local and international supermarkets, including Sainsbury's." http://www.careinternational.org.uk/CARE%20turns%20down%20US%20food%20aid+9831.twl
[73] Page 32, Poverty mapping and analysis: An RNRRS Synthesis

innovation systems. Programmes used this qualitative method of gathering and assessing information and criteria. The Aquaculture and Fish Genetics Research Programme learned that stakeholder analysis also developed a shared idea of the work to be done and how to go about it. Participatory stakeholder analysis would also take on board the concerns of the poor about actions conceived for them by outsiders identified by the Forestry Research Programme (Box 19.5).

For research outputs geared to improving livestock feed in poor communities, the feed resources framework (System-wide Livestock Programme) is expected to select and target existing feed resource options and identify projects and policies that are pro-poor. The main output will be a research and development plan on feed resources in the coming years. This seems an avenue for RIU to take, slotting in existing research findings on feed resources into the development part of this plan.

Box 19.5

Participatory stakeholder analysis will include the poor
"The poor are tired of talking to people from outside who assess the intensity of poverty but do nothing to address it. …. The poor, who have been structurally excluded from development activities for years, no longer tolerate activities implemented "for" them or plans developed "for" them. They are in the dire need of plans implemented "with" them or "by" them, and accountable to them. They often point out that they want to be involved in each activity of development that is envisioned for them."[74]

Box 19.6

Tools to help choose where research outputs are most likely to be taken up
"…the analytical tools and techniques of poverty analysis, such as poverty mapping and spatial overlays with markets and other key drivers of livestock system changes as well as the insights into pathways into and out of poverty are beginning to attract interests from other sectors, such as the health sector that are interested in customising to their specific institutions."
PRIMAS (Poverty Reduction Intervention Mapping in Agricultural Systems) is a tool that matches technology options with particular target groups. EXTRAPOLATE assesses the likely impact of policy measures on different groups. Both PRIMAS and EXTRAPOLATE were used to analyse smallholder dairy and small stock in Uganda and India.

Useful tools have been developed to manipulate poverty data and offer decision making options. The Forestry Research Programme used a visual tool, causal diagrams, to rapidly analyse data from two surveys in 2002-2003 and 2005. The causal diagrams show the links between problems and causes. This helps assess priorities and focus inputs. For example, in Nepal, the 2002-2003 causal diagram of survey data showed the main problems of the poor were as follows: not having access to credit; caste; large families; and corrupt officials. In 2005, because of the escalating conflict in Nepal, the main problems were insecurity, worsening healthcare and unemployment. The Forest Research Programme learned that the main shortcoming of causal diagrams was that by focusing on one discipline (forestry), higher priorities for the poor, such as health, were not considered. Plus, the poverty issues relevant to different categories of poor people could not be separated.

A decision support tool, PRIMAS, developed by the Animal Health Programme and Livestock Production Programme, has already been used by donors, regional agencies and national agricultural research systems to select sites for development programmes[75] (Box 19.6). Another tool to rank policy alternatives ex-ante, EXTRAPOLATE, assesses the likely impact of policy measures on different groups. Other sectors, such as health, are interested in customising these tools for their specific needs and they seem to be promising tools for RIU to use in matching areas and groups to research outputs.

This synopsis of lessons learned for up-scaling and out-scaling research into use is drawn from:
'Poverty mapping and analysis: An RNRRS Synthesis.'
See
www.research4development.info/pdf/thematicsummaries/Poverty_Mapping_and%20Analysis_P1.pdf

Brief: 'Learning from the Renewable Natural Resources Research Strategy. Poverty measurement, mapping and analysis.' Susanne Turrall.
See
www.research4development.info/pdf/ThematicSummaries/Brief8_Poverty_measurement_mapping_and_analysis.pdf

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[74] Page 40. A survey of the priority problems of the forest and tree-dependent poor people in Nepal during a time of conflict. Caught in the cross-fire. An Update Report, 2005, by Bal Krishna Kattel, Krishna Paudel and Hemant Ojha (ForestAction, Nepal), in collaboration with Neil Bird, DFID Forestry Research Programme (FRP) UK, December 2005. Kathmandu and East Malling.
[75] And possibly research, though this is not clear.

About Research into Use

Research Into Use (RIU) is a pioneering four-year programme that is working to get new livelihood-improving development options into use on a grand scale — so that they benefit large numbers of poor people.

A major goal is to put into practice the tried-and-tested results of research on natural resources funded by the UK's Department for International Development (DFID) and others. We're working closely with in-country partners, to spread the word about these options, stimulate demand for them, and help people adopt, adapt and commercialise them where possible.

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