

## *Doing things better in marginalised rural localities*

In almost all low-income countries 'rurality' is associated with geographic regions trapped in backwardness, poverty and underdevelopment. Rural areas are hardly seen as territories for producing new ideas and modern knowledge, unless they host a world-class university or research facility. Hlokomang Mangqalaza and Peter Jacobs document how new ideas to do things better can improve the quality of life in rural areas.

**M**arlow Agricultural High School, located in rural Eastern Cape, represents one example of new ways to improve educational programmes and share this across local municipal boundaries. Founded in 1931, Marlow is one of a small number of schools that specialises in providing learners – recruited mainly from surrounding rural settlements – with agricultural schooling in preparation for tertiary education or post-school farming careers.

Its rural location on the outskirts of Cradock, where there is enough farmland, has a unique advantage for Marlow's innovation activities. An experimental farm is attached to the school. The school's forward-looking leadership is constantly searching for new ideas and practices to enhance the curriculum and its pertinence in addressing developmental challenges.

Marlow's agricultural science courses include a practice-oriented stream on wool shearing, classing and artificial insemination of animals. Training also covers the mechanics of agricultural machinery, how to use various state-of-the-art farming technologies and efficient farm management skills.

Innovation activities at this school rely on inputs from a variety of outside role-players – a feature of durable innovation networks. The actors that support Marlow naturally

share a common interest in agriculture. Experts from the National Wool Growers Association and Mohair SA, among other private farming organisations, periodically visit the school to help teach key courses in sheep farming.

The school is well resourced and takes learners to career expos hosted by universities with prominent agricultural science faculties, like the University of Fort Hare and University of Free State, thus facilitating their learning about shifts in post-school career options, especially in highly skilled agricultural jobs. The government supports Marlow's innovative educational programme through the district department of agriculture, regularly inviting the school to information fairs for farmers and periodically recruiting learners for short-term internships with the department.

Marlow interacts with a similar school, Phandulwazi Agricultural High School located outside Alice, roughly 200 kilometres away from Cradock. Even though agricultural science has been the mainstay of both schools, before 2003 neither school had any user-friendly agricultural practice textbook. Marlow and Phandulwazi jointly developed training materials and guidelines to close this resource gap to deliver a core subject.

Since the introduction of the National Curriculum Statement by the Department of



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Education, both schools have received their needed education and training materials. However, according to one senior educator, the number of visits for an external review of the quality of learner assessments has been reduced from twice a year to only once a year. In the past, the visits enabled a wider range of interactive learning activities.

Resource inequalities across the two schools explain why their innovative capabilities and performance differ. Phandulwazi is a no-fee school without its own transportation and limited funds to afford frequent trips for face-to-face interactions with learners and teachers at Marlow. The school also lacks sufficient qualified educators, especially those who are able to conduct useful practical experiments at the school's experimental farm.

### **How do forms of proximity affect innovation?**

Geographic remoteness and low population density are defining features of rurality. Prolific scholarly debate centres on the meanings and forms of proximity and its significance for innovation. It implies that physical closeness is one form of spatial proximity. New ways of doing things better also depend on how close or far apart actors in the innovation space are in terms of experience, organisational culture and other less tangible forms of connectedness. Recent studies on territorial innovation systems reveal that non-spatial factors can stimulate innovative activities, even in marginalised rural contexts.

Information sharing and interactive learning form the bedrock of innovation. This process in turn rests on shared values, habits and legal rules, collectively known as a community's rules of the game. These are all elements of the institutional framework with overlapping informal (cultural norms) and formal (laws) dimensions.

Institutions are not static, but evolve over time. Strong institutional proximity means that stable conditions exist for interactive learning and the discovery of new things. However, when the 'rules of the game' are

too tight, as in highly formalised institutional systems, it can impede exploration of new ideas and stifle innovation. Neatly balancing closeness and distance is an inherent difficulty in all forms of non-spatial proximity: institutional, cognitive, organisational and social.

**Non-spatial factors can stimulate innovative activities, even in marginalised rural contexts.**

### **When will innovations promote rural development?**

Traditionally, African migrants used conventional banking or wire-service intermediaries for remittance transfers to their families in remote rural villages. When the rural family wanted to claim the cash, they incurred additional travel costs to the nearest town where a branch of the financial intermediary was typically located. But now modern mobile telecommunications have become platforms for innovative financial services to rural communities in Africa.

Without investment in leading-edge ICT infrastructure, the broader societal benefits of this innovation might not materialise. Knowledge of how to use cellphones for banking transactions is fundamental to fully tapping all the benefits of this service, which is similar to interactive text messaging or social media messaging.

Rural communities also benefit from various sustainable development innovations. A case in point is the need for moving away from the dependency on wood burning for indoor cooking and heating. This harmful source of energy supply is positively associated with deforestation and respiratory illnesses. Although the introduction of fuel-efficient and environmentally-friendly stoves

in poor rural communities makes sense from a sustainability viewpoint, communities often reject such innovations.

Cost might be a factor, but is far from the only reason why poor rural communities have not adopted fuel-efficient stoves supposedly aimed at improving their quality of life. In India, for example, expensive water purification technologies simply made clean water unaffordable. For sustainability-enhancing innovations to gain traction in poor rural communities, direct participation of targeted adopters and users of innovations in the design and implementation of innovation is required.

**Innovations (must) start from the developmental needs and aspirations of rural communities.**

In summary, this brief evidence review shows that innovation activities in rural areas cut across many sectors and involve multiple actors. Rural realities require a wider analytical lens that reaches beyond the restrictive boundaries of traditional farm-based innovations. Innovations that enhance quality of life are more likely to produce the desired improvements if innovations start from the developmental needs and aspirations of rural communities. A territorially-bounded view of rural innovation activities yields a comprehensive and rich picture of how innovation might be harnessed to spur broad-based rural development. It contains fundamental lessons for new area-based planning policies and coordinated developmental interventions.

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# Methodology wars in the measuring and evaluation of innovation

The typical instruments and manuals used to evaluate a country's level and extent of research and development and science, technology and innovation, are not appropriate for many developing countries as they overlook the glaring differences between developed and developing economies, and the innovation (products) that do exist. Alexandra Mhula, Tim Hart and Peter Jacobs discuss alternative measurements employed by other developing countries and ask whether these should not also be adapted to local circumstances.

**G**lobally, innovation and the recognition to be considered innovative appear to be increasingly popular ambitions among so-called developed and developing countries, with most striving for improved and increased innovative capacity, capability and output. To enable comparisons between countries, standardised survey tools are used to measure and evaluate a country's level and extent of science, technology and innovation (STI), using indicators such as capacity, outputs, patents and intellectual property rights (IPR).

Since the early 1960s, the Organisation for Economic Co-operation and Development (OECD) has been compiling research and development (R&D) and STI indicators. The development of these indicators took years of experimentation and scrutinising by various government agencies. As a result, the OECD developed various manuals and survey instruments, such as the Frascati and Oslo Manuals for measuring the level and extent of R&D and STI.

**Standardised innovation manuals overlook the glaring differences between developed and developing economies.**

ment instruments, quickly became internationally accepted as reference points for the development of STI indicators and the comparative measurement of innovation. They are currently used to measure innovation activities in both the developed and developing countries. However, OECD indicators are largely based on experience and circumstances within the OECD countries, rather than developing countries. Furthermore, these indicators were developed for the purpose of using national surveys focusing on formal enterprises (i.e. firms)

However, the use of such standardised instruments overlooks the glaring differences between developed and developing economies, including the diversity of reasons why specific innovation activities are selected and others not. Consequently, there is a failure to recognise the subsequent innovations (products and processes) determined by these choices.

There is a need for a more bottom-up approach to developing indicators, given that national innovation choices, outputs and capacity differ from those at the more localised level, while national comparisons do not take into account the inherent and structural differences between developing and developed countries and their econo-

mies. The need for developing more relevant indicators is perhaps most urgent in Africa.

**Africa needs bottom-up approaches to develop relevant innovation indicators.**

In Latin America and the Caribbean, these indicators have been adapted to some extent to capture the innovation diversity found in many of these countries. This pioneering work was compiled into what is known as the Bogota Manual. Unfortunately, these important contributions to measuring innovation in developing countries are simply noted in the appendix of the Oslo Manual. Consequently, much of the innovation activities occurring in informal enterprises are not captured by these instruments. Even if they did attempt to consider informal activities, the indicators currently used (outputs, commercial/market value, tertiary education, IPRs etc.) are insufficient.

Local innovations occurring in the informal sector cannot be neglected, especially in developing countries where they play a crucial role in the local development of rural communities and their livelihood strategies. In many cases such innovations address local social and economic challenges, including unemployment, food and water scarcity, and inadequate health, social and education services. While it makes sense to adapt the best and most relevant OECD indicators when compiling STI and R&D assessment instruments for developing countries, including South Africa, it is imperative to also develop and include indicators that would accommodate the local diversity of these countries.

The international PROLINNOVA (Promoting Local Innovation in Ecologically-oriented Agriculture and Natural Resource Management) network has made significant strides in emphasising the importance of local innovations, particularly in African agriculture and natural resource use. Where appropriate, the programme attempts to strengthen the linkages between farmers, users, researchers, NGOs and other more formal stakeholders in agricultural R&D.

Partnerships are largely directed by farmers and increase the capacities of all partners to address their challenges in an ever-changing world. From this work PROLINNOVA partners have started working towards the development of locally relevant indicators, offering a pool of local level indicators that considers local realities in rural areas of developing countries. Without doubt, these realities should be incorporated into innovation decision-making at the national level.

**It is critical to develop an approach that combines national and internationally comparative indicators... with indicators generated by innovators and actors active at the local level.**

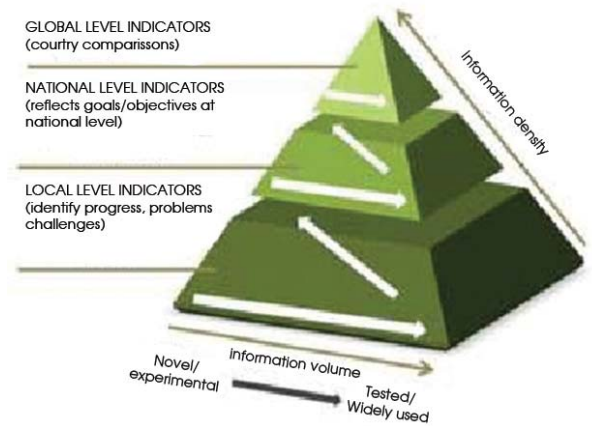
This participatory approach emphasises the importance of involving local communities in innovation activities to stimulate social action, while allowing for self-learning, reflection, appropriate action and improved understanding by all actors involved. It also provides additional benefits to both researchers and the local innovators, because it is not only an additional source of valuable information for the researchers, but also an important source of self-learning and understanding for both parties..

To have a coherent and informed picture of innovation activities in a developing country, it is critical to develop an approach that combines national and internationally comparative indicators, such as those developed by the OECD, together with indicators generated by innovators and actors active at the local level. Top-down development of instruments and indicators is inadequate. Such an approach needs to be well balanced to ensure local needs and circumstances that direct local innovation activities and ultimately, outputs, are not ignored.

Figure 1 is an illustration of the indicator pyramid, an approach worth experimenting with when developing a methodology for STI indicators for African and other developing countries.

The indicator pyramid consists of three levels of indicators: global, national and local. The top of the pyramid comprises global indicators such as the OECD indicators found in the Frascati, Oslo and other manuals that allow for international comparability among countries. National level indicators are those developed by national statistical agencies and research institutes, and are measured by means of large-scale surveys. Indicators at this level may also be developed by various research and academic institutions.

Figure 1: Indicator Pyramid



Often these indicators and measurement instruments do not differ from the ones used for global comparative purposes. At the bottom of the pyramid there are indicators that can be extracted from case studies and small sample surveys. These are especially important to collect information about innovation at the local level. The indicator pyramid suggests that rather than standing alone, the local level indicators should be used to develop relevant indicators for the national and global levels.

Despite the involvement of numerous research organisations, the development of local level indicators that could contribute to a framework such as the pyramid indicator framework is lacking, or slow, at best.

Strengthening these contributions would enable the further development of stronger national and global level indicators, while ensuring that locally developed innovations were not ignored and their relevance to local people as part of their own attempts to improve their socioeconomic circumstances were acknowledged and given value.

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