

## **Engaging With Existing University Citylabs and Other Organisations Closely Linked With Grassroots Communities**

### **PURPOSE**

The Innovation for Development (INNO4DEV) subcommittee of National Advisory Council on Innovation (NACI) has decided to engage with South African university CityLabs and other organizations such as Meraka Institute, Wits Rural Facility (WRF), Deloitte and Development Bank of Southern Africa (DBSA) (see **ADDENDA B-E**) that are closely linked with grassroots communities through the local and national government as well as Non-Governmental Organisations (NGOs). The engagement was intended to:

- Understand how the organizations were working with grassroots communities through the application of technological and non-technological innovations.
- Identify gaps that may warrant urgent attention regarding the expansion of the functions of these organizations in order to maximise their impact.

### **CITYLAB**

CityLab is the umbrella or core research platform for the collaborative research programme of the African Centre for Cities (ACC) that is focused on the city of Cape Town. The University of Cape Town (UCT) is the only South African institution that has embraced the CityLab. The mandate of the UCT-CityLab is to:

- Focus on empirical research in the informal settlements of greater Cape Town.
- Bring together researchers and practitioners from different disciplines and professions.
- Learn from practical and disseminated knowledge in order to build sustainable human settlements.

### ***Successes achieved***

The UCT-CityLab has managed to bring together, in a neutral place, different role-players (academics, community-based organizations, NGOs and government officials) who would not normally meet, and facilitate dialogue and possible collaborations between these groups. For example, in an informal settlement at Philippi, a community risk assessment (CRA) was done by the Disaster Risk Mitigation Programme (DIMP) that is based at UCT. The informal settlement community identified “crime” as the biggest risk facing the community. Through the CityLab process the DIMP representative involved in the CRA, teamed up with some community representatives and councilors, as well as an NGO working in the Philippi area, to start a community safety initiative which included a neighborhood watch. This is just one example of the role that the CityLabs can play in facilitating community action.

### ***Challenges***

The biggest challenge is to balance the interests of all role-players involved in the UCT-CityLabs and to deal with expectations which cannot be met. Community groups for

example are mainly interested in generating action which would result in a tangible improvement in their living conditions. By contrast, academics have to produce academic outputs and are constrained in the extent to which they can get involved in practical projects on the ground. It is therefore important to be very clear about the facilitative role of the UCT-CityLab and to deal with unrealistic expectations upfront.

### ***Future plans***

The UCT-CityLab has only been running for a short while now and therefore does not yet have good examples of technological innovation. In future, the UCT-CityLab has plans to link with grassroots communities through development orientated projects such as the application of participatory Geographic Information System (GIS) methodologies. Its aim is to use participatory action research methodologies that will allow communities to define the research priorities based on their needs and encourage them to participate in decision-making. For example, for urban flooding it intends to introduce innovative urban drainage technologies such as the sustainable urban drainage systems.

## **OTHER ORGANISATIONS**

### ***Technology transfer***

The Development Bank of Southern Africa (DBSA), Meraka and the Wits Rural Facility (WRF) first address language and cultural barriers by seeking to understand the socio-economic issues within the target communities who would be the recipients of the technologies. These organizations utilize local community members (facilitators) to help communities understand the technologies being transferred and ensure smooth diffusion. Facilitators train and communicate in the relevant local languages when introducing new technological innovations. Communities are also allowed to be involved in the planning of projects and during reporting of progress so that they too can participate in decision making.

The WRF, DBSA and Meraka make sure that target communities understand what technological innovation is, and how it works, in order to facilitate diffusion and ensure easy implementation. Experts are brought in to assist with training or direct engagement with communities to ensure that peer learning and other communication methods such as brochures, presentations and Do-It-Yourself (DIY) guides enhance their understanding of and interest in technological innovation.

The three organizations apply both technological and non-technological innovations. Some examples include:

- Building techniques
- Sanitation and energy options
- Digital Doorway
- Mesh network
- Living Labs
- Coping strategies such as access to resources and support
- Using best practices identified in case studies to promote innovations

### ***Expanding role of these organisations***

As already mentioned, UCT-CityLab, DBSA, Meraka and WRF all support the creation of a two-way approach in terms of having a technology transfer process, as well as the gathering of innovative ideas with development potential from the communities. The following initiatives are already in place to expand role of organizations working with grassroots communities:

- Meraka introduced:
  - A touch-screen self-service kiosk that allows communities to register their innovative ideas for possible development.
  - The Wireless Africa Community Owned Information Network (COIN) to ensure access by communities to infrastructure.
- Meraka/DST sponsored Living Laboratories of South Africa (LLiSA):
  - Allows the development of prototype inventions by grassroots communities at no cost.
  - Considers innovative ideas that come from grassroots communities.
- WRF's well established Foundation of Research and Community Relations allows for technology transfer and exchange of good ideas.

### ***Successes achieved through the application of existing technologies***

These organizations have had an impact through the development of innovations and have also experienced some challenges. Positive impacts include:

- Meraka supports other organizations that create solutions at a grassroots level, for example, Deloitte of Tomorrow's (DOT) successful Junior Achievers project was piloted in five disadvantaged schools where cell phones were used to enhance the teaching of Maths, Science and English. The project is now being rolled out to fifty more schools.
- The DBSA initiatives:
  - The Students in Free Enterprise Initiative, which encourages students at university to identify innovative projects that can provide sustainable projects for communities.
  - The Creativity Board Game sponsored by Junior Achievement of South Africa, which aims at developing entrepreneurial and innovative thinking skills amongst the youth.
  - The DBSA, together with the DST and other organisations, are founding members of the South African Innovation Network, a not for profit internet based organisation that provides a platform for discussion and debate around innovation, best practices and key learning.
- Deloitte's initiatives:
  - A network of various institutions including the CSIR, Meraka Institute, University of Pretoria and Student Villages that help with the communication and sharing of innovative ideas within the network. Social networks like peer-to-peer networks are also used to share ideas.
  - Bridging the skills gap and empowering neglected graduates to become employable individuals.

- The WRC plans to pilot a rotational coppice harvesting system for sustainable production of fuelwood in selected communities. The challenge is to manage community expectations. Partnerships between academia, government, communities and development organizations are seen as a solution to addressing the needs of communities.
- Piatona's community project transfers the technological know-how to produce ceramic tiles to grassroots communities and then ensures that trainees are employed to produce more tiles according to the market demand.
- CSIR Meraka Institute's Digital Doorway is an enabling, self-learning tool. It serves as both a tool for computer literacy development and a source of information on a range of subjects. The content includes the Open Office suite, educational games and programs, an introduction to computer terminology, scientific software, 10 000 books from Project Gutenberg, a snapshot of the Wikipedia, Mindset health and curriculum-based educational videos, interactive science simulations and numerous other applications for children and adults. Also included are:
  - The "Wireless Africa" technological devices that are installed in streets of villages and community centres.
  - Digital's Doorway's e-learning technology in Indigenous Knowledge Systems and Agriculture.
  - The Motataisi Living Laboratory in Lesotho, which is intended to educate and provide the overall knowledge coverage that can be adapted to the communal, national and global development strategies. The Living Laboratory energizes communities and helps them realise that they have to solve their own personal problems by using their resources and control, supported by external resources and expertise.

The identified challenge that needs to be addressed is the gap between the technology barrier and low-skill capacity in most rural areas. To address this, community members need to be trained in order to ensure easy technology diffusion.

- The DBSA introduced a revised site layout for house construction and solar water heating that changed the nature of settlements in rural areas immensely. The challenges were that communities did not like to adopt a new approach, and funding for solar heating was difficult to obtain. Issues around adherence to standards by HSBRC and SABS were found to inhibit progress.

### ***"Low-hanging fruits"***

All organizations were in support of the implementation of pilot project(s) that could immediately make an impact in communities. To do this, it was suggested that existing good technological or non-technological innovations ("low-hanging fruits") should be implemented in the short or medium term. The following key areas were considered to be critical in this regard:

- Water and sanitation.
- Food security – low input agriculture through application of agroforestry techniques and technologies.
- Affordable domestic energy – use of renewable energy technologies and innovative fuelwood management systems.

- Access to safe drinking water through use of efficient water technologies.
- Access to IT and cell-phone services for communication in banking, healthcare and other services.
- Enterprise development through use of Farmer-to-Pharmer grand challenge.
- Agroprocessing (value-addition) and commercialisation of local natural resources e.g. marula fruits and pharmaceutical products.
- Healthcare system – HIV/AIDS, TB and malaria treatments, vaccines and prevention, and mainstreaming traditional medicine in the healthcare system.
- Information technology in schools e.g. low maintenance computers, open source software, wireless internet connectivity, cell-phones (to improve teaching).
- Environmental and waste management.
- Housing.

The above technologies include those that are working well and have been recognized for innovation awards, such as the Sakhasonke Housing Village, Feedback Food Security and Community Development Programme, and should continuously be replicated in order to address the widespread social challenges. The DBSA has been a strategic partner of the Impumelelo Innovation Awards trust that recognizes these projects through an award mechanism. The DBSA has provided a platform for these awards to be replicated through workshops. The last workshop was held in May 2009, and focused on Environmental projects, including the Mariannahill Landfill Conservancy Project. Involving grassroots communities in the participatory research methodology was seen as a strategy that would allow communities to define research priorities based on their needs and participate in decision making, in order to avoid unrealistic expectations that could lead to issues of mistrust.

## **CONCLUSIONS AND RECOMMENDATIONS**

The UCT-CityLab has only been running for a short while and therefore does not yet have many good practical examples of technological and non-technological innovations that can be used for a roll-out in grassroots communities. However its participatory approach and methodology to deal with crime, by involving all stakeholders as well as affected communities, is a good example of a non-technological innovation that could be adapted to address other social challenges within rural settings.

The Meraka Institute, DBSA and Wits Rural Facility collectively have many innovations that have proven to be successful within various communities of South Africa as outlined in the preceding sections, and these have the potential to be rolled-out to make a difference to lives of neglected grassroots communities. Perhaps those innovations, together with the understanding of socio-economic situations where innovations are intended to be rolled-out, require a critical evaluation for compatibility and relevance.

All four organisations heartily support the consideration of ideas from the grassroots communities who are recipients of technologies or innovations. With this in mind it would

be beneficial for these organizations and other stakeholders to meet and discuss the various existing methodologies in order to develop a robust framework to improve current innovations to make them meaningful. Such consultation has the potential to unleash great ideas that can be converted into innovations or services. In this way several “low-hanging fruits” such as water and sanitation, food security, healthcare and energy can be identified as short or medium term pilot projects that can have an immediate impact on the lives of communities. Of most benefit would be to select those “low-hanging fruits” that will effectively address a specific need, challenge or opportunity according to the requirements of different communities.

## **ADDENDA**

### ***ADDENDUM A. QUESTIONNAIRE***

- How does your organisation bring messages of technological innovation to grassroots communities considering language and cultural barriers? How do you make sure that innovations are well accepted by communities to alleviate poverty?
- Do you assist communities through the application of technological or non-technological innovations?
- Do you make sure communities understand what a technological innovation is? If yes, how do you do that?
- We, as NACI, are thinking of promoting new ideas or concepts from communities to exploit potential benefits and expand operations of your organisation by encouraging the application of a two-way approach i.e. Ensure technological innovations are rolled-out appropriately from your facility to communities and exploit new ideas from communities that can possibly be transformed into new innovations. Do you think our approach will add value?
- Give examples of some positive impact the facility has been making as well as challenges identified. Give recommendations on how to respond to challenges confronting the facility and communities.
- Has your organisation been doing things that require short-term or urgent attention to improve lives of communities? If so, what is it that the organisation has done for communities to ensure a long lasting relationship?
- What immediate projects, technologies or innovations (low hanging-fruits) do you think should be implemented in order to improve lives of communities?

### ***ADDENDUM B. ENGAGING WITH CITYLABS AND RELATED ORGANISATIONS CLOSELY LINKED WITH GRASSROOTS COMMUNITIES***

#### ***➤ Technological innovation and language and cultural barrier***

The University of Cape Town CityLab (UCT-CityLab) has only been running for a short while and we do not yet have concrete examples of technological innovation. For the Urban Flooding CityLab it is intended to introduce innovative urban drainage technologies ('sustainable urban drainage systems') and participatory GIS methodologies to grassroots communities, but this has not yet commenced (there are some international case studies of, for example, participatory GIS processes which could be drawn on, though).

#### ***➤ Impact made by UCT-CityLab and challenges experienced***

The biggest value-add of the CityLab is in bringing different role-players (academics, community-based organizations, NGOs and government officials) who would not normally meet, together in a neutral space in order to facilitate dialogue and possible collaboration between these groups. In the Philippi CityLab, for example, a community risk assessment (CRA) was done in an informal settlement in Philippi by the Disaster Risk Mitigation Programme (DIMP), based at UCT. The informal settlement

community identified “crime” as the biggest risk facing the community. Through the CityLab process the DIMP representative involved in the CRA teamed up with some community representatives and councilors, as well as another NGO working in the Philippi area, to start a community safety initiative which included a neighborhood watch. This is just one example of the role that the CityLabs can play in facilitating community action.

The biggest challenge is to balance the interests of all role-players involved in the CityLabs, and to deal with expectations which can not be met. The main interest of community groups, for example, is to generate action which will result in a tangible improvement in their living conditions. Academics on the other hand have to produce academic outputs and are constrained in the extent to which they can get involved in practical projects on the ground. It is therefore important to be very clear about the facilitative role of the CityLab and to deal with unrealistic expectations upfront.

➤ ***Formalising links between communities and UCT-CityLab through implementation of case studies that will yield “low-hanging fruits”***

If the intention is to formalize links between CityLabs and communities then the community should be involved in the process from the start. A participatory research methodology allows communities to define the research priorities based on the needs of the community, and to participate in decision-making around the collection and dissemination of information.

***ADDENDUM C. WITS RURAL FACILITY SITUATED IN ACORNHOEK***

The Wits Rural Facility (WRF) serves as a rural base for the University of the Witwatersrand to undertake research, student training and community engagement in the central lowveld of Limpopo and Mpumalanga Provinces. The WRF is a campus and service provider that enables these activities and provides a sustained university presence in an under-resourced rural part of South Africa. A number of university research and academic programmes, spanning a range of disciplines, use the facility as either a permanent or temporary base to conduct their work in the rural communities of the former homelands of Lebowa and Gazankulu, as well as in surrounding game reserves. Key focal areas include rural health, demography, and natural resource use. WRF is on the verge of a new phase of development which will be characterized by up-scaling and strategic development of the academic activities operating from the facility, including better co-ordination between programmes and partnerships with government. The core focus will continue to be the generation of information, knowledge and human resources necessary for tackling the challenges of development in rural southern Africa.

➤ ***Technological innovation and language and cultural barrier***

The Wits programmes operating from the WRF have structured processes for engaging with rural communities, including the communication of research findings. For example, the Wits/MRC Agincourt Health and Population Unit conduct annual village-level research feedback meetings in all 25 villages in their demographic surveillance site in southern Bushbuckridge. They have also established a Community Advisory Group (CAG), in which each of the villages has an elected member. The unit meets regularly with the CAG to discuss any planned or new research projects in their area, to elicit their response and

input as a community. They have also invested resources in training CAG members about research, including research ethics and how to use and interpret research findings. Staff recruited from the local communities lead these feedback meetings. The SUNRAE research programme (Sustaining Natural Resources in African Ecosystems) has run policy workshops with local government officials to explore the policy implications of their research findings on links between HIV/AIDS mortality, household use of natural resources, and food security.

➤ ***Application of technological or non-technological innovations***

Much of the Wits research operating from WRF is applied or action research. The innovations are not necessarily technological in nature, but do have benefits for local communities. For example, the Rural AIDS and Development Action Research Programme (RADAR) partnered with a micro-finance organization to make micro-finance available to poor, vulnerable rural women. This was an innovative intervention to test the hypothesis that poverty and lack of economic opportunities cause rural women to engage in activities which expose them to risk of infection with HIV/AIDS. By providing vulnerable women with access to micro-finance, they were able to reduce the likelihood of them engaging in risky behaviors (e.g. sex for money) as a coping strategy.

➤ **Understanding of technological innovation by communities**

No response

➤ ***Promoting new ideas or concepts from communities to exploit potential benefits and expand operations***

Although the various programmes based at the WRF are already doing this to varying degrees, we envisage that the new phase of WRF's development will include more effective strategic development and coordination of academic activities, and synthesis of research findings of university initiatives based at the facility. This will build on Wits' already well-established foundation of research and community relations in the region, and provide a great opportunity for the type of roll-out and two-way integration of innovation envisaged by NACI.

➤ ***Positive impact made by WRF***

Impacts by Wits in the region are hard to measure, as they are incremental, multi-scaled, and often compounded by other external positive impacts such as government programmes. The RADAR programme above is one such example. Another example is the research by the Agincourt Health and Population Unit which showed that there was very low uptake of child support grants in rural areas, primarily due to a lack of ID documents. They alerted the local leadership and the Department of Home Affairs, who organised a documentation campaign with mobile offices, resulting in 8,000 people getting identity documents. In another instance the ESKOM/WWF Renewable Energy Fund has awarded SUNRAE a grant to do a scoping project on the feasibility of a community-based system of rotational coppice harvesting for the sustainable production of fuelwood. This project will be piloted with selected communities.

Managing very high community expectations is a huge challenge. Related to this is the challenge, as an institution of higher learning, of using science to leverage positive change for the benefit of rural communities, without trying to fulfill the role of a development N.G.O. or government. For this reason, we regard partnerships between academic institutions, communities, government and development organizations as being vital in the endeavor of tackling poverty and under-development.

➤ ***List of short-term activities***

Much of the research conducted at the WRF addresses urgent rural development issues such as HIV/AIDS, food security, and environmental sustainability. This research builds incrementally on a solid foundation of good community relations and a body of scientific evidence accumulated over time. The relationship with the community is based on trust and a good track record.

➤ ***Immediate projects or “low-hanging fruits”***

Key focal areas that should receive attention in rural areas include food security (e.g. low-input agriculture or agroforestry techniques and technology), affordable domestic energy (e.g. renewable energy technologies and innovative fuelwood management systems), access to safe drinking water (e.g. robust and efficient water technology), access to services (e.g. innovations such as information technology or IT and cell phone technology for communication in banking, health care services etc), enterprise development (e.g. “farmer-to-pharma”, micro-enterprise manufacturing sector and commercialization of local natural resources e.g. products from *marula* fruit), health (e.g. HIV, TB and malaria treatment, vaccines and prevention, and mainstreaming of effective traditional medicine in health care), and information technology in schools (e.g. robust and low-maintenance computers, free and open source software, and wireless internet connectivity).

**ADDENDUM D. DEVELOPMENT BANK OF SOUTHERN AFRICA (DBSA)**

➤ ***Technological innovation and language and cultural barriers***

- We use facilitators that can translate – not only language, but also culture. We do not enforce, but inform and engage – it is ultimately for the community to take decisions within resource constraints.

➤ ***Application of technological or non-technological innovation by communities***

- Both (I trust). Some innovations are process ones – but sanitation options, building techniques and energy options are surely technological.
- We can use case studies that have been published to promote this – see input under case study question further down.

➤ ***Making sure communities understand what technological innovation is***

- By all means depending on what it takes, we will use brochures, presentations, bring experts to the people or take the people to living examples where they can engage with people using that (peer learning).

➤ ***Believing in promoting new ideas or concepts from communities to exploit potential benefits and expand operations of DBSA***

- Yes – it is something we are doing, but certainly we can use further good examples and technologies and resources to do influencing and roll-out.
- There are also organizations that we have been in contact with and who we engage with that have expertise in the field of technological innovation at grass root community level. This includes organizations housed at the CSIR like Meraka, that have rolled out the digital doorway project, providing internet connectivity through touch screen self service kiosks to underprivileged communities.
- Another initiative that is sponsored by the DST is the Fab Lab concept, that is designed around the Living Laboratory model that has worked very well internationally. This mobile lab will allow communities to prototype possible inventions at no cost while receiving support and guidance from specialists. This type of initiative should be supported by Inno4Dev and DBSA.

➤ ***Real examples of positive impacts***

- Introducing a revised site layout and housing construction in Grabouw is changing the nature of the settlement immensely. Challenges are still that people like to stick to convention and that (in spite of all the talk) it remains difficult to get funding for solar water heating. The issues of “Standards” by both HSBRC & SABS are inhibitive.
- The DBSA also supports other organizations that create solution at a grass root level. These organizations include Junior Achievers of South Africa and Students in Free Enterprise. Recently we have started conversations with Ashoka South Africa to find synergies for delivery

➤ ***DBSA’s short-term activities to improve lives of communities***

- The erection of high-mast lights in Ngangelizwe was a “quick response/win” which contributed significantly to safety in the community.

➤ ***Support for case studies to quickly generate “low hanging fruits”***

- If Inno4dev mobilises existing good technologies to be applied during implementation of case studies, DBSA will support this.
- Energy, water and sanitation – also food security and waste!
- The DBSA and Inno4Dev should also create opportunities for the replication of innovative projects that are working really well in solving development challenges in waste management, food security, as well as housing. Many of the best practice case studies have been printed and have been rewarded; more needs to be done to ensure continuous replication and visibility from a policy level. Some of these projects include the Mariannhill Landfill Conservancy Project, the Sakhasonke Housing Village Initiative and the Feedback Food Security and Community Development Programme to name a few that have already been recognized for innovation awards. We can identify case studies from some of these already identified.

### ***ADDENDUM E. CSIR MERAKA INSTITUTE***

The Meraka Institute derives its mandate as a national strategic initiative from President Mbeki's 2002 State of the Nation Address, where the concept of an ICT University was first announced. A large-scale intervention in the ICT space to address challenges in both the first economy (well developed and integrated with the global economy) and the second economy (characterised by informal economic activity and poverty) was needed. As such, human and intellectual capital interventions are required that address both advanced technical research challenges ("wealth creation") and urgent developmental challenges ("quality of life"). The establishment of the Meraka Institute in accordance with President Mbeki's call in February 2002 will address three critical areas:

- Human capital development in ICT forming a critical thread throughout the Institute's activities and ensuring continued development, growth and sustainability.
- Innovation in ICT leading to applications that address development challenges facing South Africa, the continent and the developing world thereby directly contributing to addressing the challenges faced by the second economy.
- Advanced technical research enabling indigenous ICT leadership, through a critical mass of high quality research and development

#### ***➤ Technological innovation and language and cultural barriers***

After thorough research into socio-economic development and through a multidisciplinary collaboration with different stakeholders, Meraka ensures that it formulates innovations that can be easily accepted by the communities and using acceptable approaches. One of the examples of an acceptable approach is the introduction of the 'mesh' project whereby a member of the target community or village is appointed to participate as an operator and is well trained if he/she agrees to the proposal presented. The village operator would then communicate and train interested community members using the local language.

#### ***➤ Application of technological or non-technological innovation by communities***

Meraka is focused mainly on technological innovations and in the wireless or broadband projects like 'Fundi' and 'Mesh Network' only one member of a community is well trained to operate the network and pass the information acquired to other members. The introduction of the Rural Living Labs by Meraka, CSIR and other stakeholders involved provides both technological and non-technological innovations indirectly.

#### ***➤ Making sure communities understand what technological innovation is***

Meraka's main role is to lay a foundation of technological innovation and they have had successful projects like 'Wireless Africa'. In introducing their projects, a limited number of poor villagers or farmers were sent for training to ensure that technological innovations were well understood. There is also a published Do It Yourself (DIY) guide that comprises a simplified step-by-step guide to assist in the installation of the mesh nodes.

#### ***➤ Believing in promoting new ideas or concepts from communities to exploit potential benefits and expand operations of CSIR Meraka Institute***

The Wireless Africa-Community Owned Information Network (COIN) of Meraka was specifically designed so as to remove barriers to enable bottom-up creation of access

infrastructure. In addition to such an inclusive project, the Living Labs of South Africa (LLiSA) have been piloted successfully in the Sekhukhune Rural Living Lab project. The Living Labs project indirectly encourages/enhances a two-way approach as community members have the chance to be part of solutions in the labs which are located in their villages.

➤ ***Real examples of impact by use of technological innovation***

Projects of the Meraka Institute have made and are still making major impacts in various communities at various areas in South Africa and other parts of Africa. Some of the examples of these projects are the 'Digital Doorway'- whereby people are encouraged to do cognitive learning on their own using technological devices installed in streets of villages or their community centers, "Wireless Africa' which can be subdivided/segmented into several other projects, the 'COIN' (outlined above), 'First Mile, First Inch'-innovating different ways of providing connectivity to the user (First Mile) and streamlining the interface between the user and the computer (First Inch). The monitoring and evaluation of Meraka projects is done from the onset to the end of the project (about three to four years) to ensure that it is well/successfully accepted and utilized. The results of such evaluations are not yet published as they are still being recorded.

The main challenge to such ICT projects is the gap that has to be closed between the high-technology barrier and low-skill capacity in most of the rural communities. It is not an easy task to lower the technology barrier to a point where quality is not compromised.

➤ ***Short-term projects or activities***

With some of the stakeholders partnering with Meraka being the academic institutions, some of the projects are limited to the time allocated to acquiring a degree.

➤ ***Immediate projects that can yield "low-hanging fruits"***

In an interview with Dr Ajay Makan, he clearly stipulated that an immediate introduction of any technology or innovation is indeed a recipe for disaster if not clearly planned. The reason for this is that it takes time to build trust between the community and professionals, as the communities are always on guard so as not to be robbed by anyone, and can easily reject anything which they do not trust. It is for this reason that Meraka does not engage in such immediate technology transfers.