

# Using the Rural Living Lab Methodology (RLLM) to Enhance Community Participation in Rangeland Management

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## ***Abstract***

*Community participation in rangeland management is a tricky and controversial process. Current practices of community participation in rangeland management in Africa are abound with dissatisfactions and frustrations on both sides of practitioners and local communities. This paper proposes the application of the rural living lab methodology (RLLM) as an alternative to the traditional methodology of community participation in development programmes. The rural living lab methodology is a new methodology in Sub-Saharan Africa. It is basically a user-centric approach that empowers local communities with appropriate knowledge and skills for sustainable management of rangeland resources. The methodology facilitates the integration of local and external experiences through collaborative research, innovation, and sharing of the new methods that empowers the local communities. The paper's introduction is followed by an overview of current models of community participation in rangeland management, outline of the models' deficiencies, and explanation of how the rural living lab methodology could be a viable alternative for sustainable rangeland management in Sub-Saharan Africa.*

**Keywords:** *Healthy rangeland, Community participation, Rural living lab methodology, users, Africa*

## **Introduction**

Attaining healthy rangelands has been the main preoccupation of rangelands experts all over the world (Hollecheck 2001; Teague et al, 2008; TerrAfrica, 2019). The thrust towards attaining effective and sustainable rangeland management has hinged on the way local communities are involved in practice (Ulambayar & Fernández-Giménez 2018). This issue has been a subject of much debate with the main focus on the current practices which are abound with dissatisfactions and frustrations on the sides of practitioners and local communities (Bedunah & Angerer 2012; Baival 2012; Kelly 2016). There are concerns and criticisms over the existence of gross incompatibilities in community participation in the rangeland management particularly surrounding the effectiveness of the interventions that are applied (Kiwango et al., 2017).

Attempts to address head-on this situation have had mixed responses from local communities (Mamo 2012; Tilahun 2016). The introduction of community-based natural resources management programmes has had some positive impacts but the general situation has remained unsatisfactory to both sides. Thus, the pressure for a holistic mode of community participation in rangeland management hinges on. There is need for a system that ensure that all stakeholders have equal access to participation opportunities and provide a variety of mechanisms that empower the local communities to effectively participate. So, why are the current models of community participation in rangeland

management not effective? What could be the most effective methodology and how this methodology can be implemented?

This paper proposes the application of the Rural Living Lab Methodology (RLLM) as an alternative to the traditional methodology of community participation in rangeland management. The paper starts with an overview of current models of community participation in rangeland management and proceeds to outline the deficiencies in the current models of community participation, and explains how the Rural Living Lab Methodology (RLLM) could be a viable alternative for sustainable rangeland management in Africa.

### **Overview of current models of community participation in rangeland management**

Community participation in rangeland management is a sub-set of community-based natural resource management approaches (NRM). Several models of community participation have been proposed in attempts to address the conditions that impinge upon the attainment of healthy rangelands and sustainable animal productivity (Reed et al, 2007). Some models of rangeland community participation have gone a long way to integrate local and scientific knowledge in an attempt “to identify rangeland management strategies to reduce or adapt to land degradation” (Fox et al, 2009). Theoretically, and in policy terms, the main focus in those models is the empowerment of the local communities in managing the rangelands in their respective areas. However, the current models of community participation in rangeland management are criticized for being “bureaucratic”, “academic”, “inadequate”, and “problematic” as they fail to empower the local communities (Briske et al, 2017). There is

evidence that in many community rangeland development programmes the bureaucratic culture has hijacked the process of community empowerment by usurping the context. In most of the programmes the processes of community participation in rangeland management are linear and seldom conducive to empowering local communities. The administrative structures of the process have remained top-down, gender-insensitive and resistant to devolution of power to local communities (Byakagaba et al, 2018).

Other models of community-based rangeland management have established protocols that identify key variables that outline criteria and descriptors that characterize the parameters of community-based rangeland management (Robinson et al, 2018). The protocols provide guidance for conceptual and methodological approaches that could be used in designing effective successful interventions in realizing healthy rangelands. Case study approach is the main focus in the protocols where the central theme is what actually constitutes a community and how that community is involved in rangeland management. In the context of the protocol approach, the concept of “community” refers not only to the indigenous and local pastoralist communities but to a broad range of other stakeholders like non-governmental organizations (NGO), local and international environmental organizations, hunters, farmers, youth and women interest groups.

The protocol model of community-based rangeland management is complimented by the *new institutional economics* model that postulates community-based rangeland participation within the *institutional rational choice (IRC)* theory (Sabatier 1991; James

1992, 1994; Ostrom 1990, 1991, 1994; Lund 2001). The model contextualizes a community as a group of rational individual actors who act collectively to determine optimum utilization of natural resources and valuation of outcomes of their actions based on expected costs and benefits (Ostrom 1990; 1991). Community-based rangeland management is determined by institutional arrangements which are critical factors that define actions that are permitted, required, and forbidden in maintaining rangeland sustainability.

Social-psychology models have been used to understand conservation behavior of farmers (Beedell & Rehman 1999; St. Jones, Edwards-Jones & Jones 2010). The social-psychological framework integrates and extends existing theories of agricultural extension and theories of innovation diffusion (Fuglie and Kascak 2001; Kreuter et al. 2006; Lubell and Fulton 2008) and theory of planned behavior (Fishbein and Ajzen 1975; Ajzen and Madden 1986; Ajzen 1991). The main focus is on how the conservation behaviour of a group, or individual, is influenced by rules governed by either formal, or informal institutions (Agrawal & Gibson 1999). Therefore, attention is paid on how local communities in rangelands conceptualize community-based rangeland management (CBRM) and adopt the most appropriate strategies to conserve the natural resources within and outside the rangelands. The argument in these models is that they provide valuable insight on the local communities' perception of the heritage value of rangelands and the way they use the resources in the rangelands (Lubell et al 2013). Such understanding enables policy makers to determine how local communities will likely be responsive to rangeland conservation interventions designed by the Government and conservation agencies. This will clear the

way for sustainable rangeland management because the local communities will have learned and practiced optimal utilization land use.

Macro and micro-economic models have been used to explain the importance of community participation in rangeland management (Hartwick & Olewiler 1997; Chapman 1999). Two theories dominate the focus on the economics of rangeland management and sustainability. These are: rangeland economics (Burt 1971; Crom 1985) and environmental and natural resource economics (Tetenberg & Lewis 2009, 2012). The main focus of rangeland economics is on maintaining healthy rangelands through optimal utilization of rangeland resources in order to produce high quality forage and animal products like meat and milk. Thus, rangeland economic models forecast on resource availability and livestock productivity in balancing rangeland carrying capacity with the needs of local communities, stakeholders and user groups (Chapman 1999). In this context, the value of forage as a feedstuff is determined relative to that of other feed sources for use in aggregate efficiency utilization.

Environmental and natural resources economics models also examine the economic, social, and institutional aspects of ecosystem services impacted by the conservation practices (Agrawal 2010). Based on the model of community-based natural resources management (CBNRM), the emphasis is on community-level institutions as the most effective channels of sustainable reangeland management (Shanker 2014). The main focus of CBNRM is on optimal utilization of natural resources by maintaining the equilibrium between natural resource availability, productivity, and human and wildlife consumption demands

(Tanaka et al, 2016). The model is premised as a people-oriented approach that integrates the natural resources conservation base with sustainable development to thwart off underdevelopment. The physical environment is recognized as part of the community and considers the community as part of the landscape (World Neighbours 2020). Thus, local communities are central for healthy rangeland management since they possess indigenous knowledge for sustainable conservation of the natural resources in their locales.

### **The deficiencies of the current models of community-based rangeland management**

The main deficiency in the current models of community participation in rangeland management hinges on conceptual and methodological approaches that are used to define “community participation” and the implications arising thereof on the ground (Briske 2017). There isn’t yet, in practical terms, a workable model of rangeland community participation. Local communities are conceptualized as a homogenous group of people with same values and aspirations. The approaches used do not take into consideration the fact that rangeland inhabitants are extremely heterogeneous in terms of socio-economic background, culture, education, life styles and have a wide range of different and often conflicting priorities and interests.

Community participation in rangeland management has been largely limited to the level of consultations only. Most of the approaches that are used do not consider the socio-economic spectrum of inhabitants living within and outside the rangelands. The process around rangeland community participation has usually been lengthy since planning methods and procedures are

conservative, gender insensitive, top-down and often delay community participation. The rangeland master plans or policy documents usually embody conceptual approaches that mask participatory, community-based, bottom-up planning. As indigenous users of the rangelands, the local communities figure out as parameters who are external to the intervention programmes. These approaches have hindered the realization of real-life Transformational Community Representation (TCR) and Transformative Community Involvement (TCI).

In Sub-Saharan Africa, the issue of rangeland community participation is still nagging and is a major issue in attaining sustainable management of rangelands. The advocated modes of rangelands intervention programmes have largely been donor-driven than indigenous grounded. Patronage, slow institutional reforms, and symbolic involvement of local communities has been a dominant feature in government and donor funded rangeland community participation programmes (Nelson & Agrawal, 2008; Kamoto et al, 2013). A recent review of participatory rangeland management in Africa shows the practice is frost with many problems, the most common being slow institutional reforms (Shanker 2014; Ebrahim & Fasil 2018). Most of the models have been criticized for being “archaic”, “unfriendly”, “exogenous” and marginalization of women (CGIAR 2002; Kilian & Hyle 2020).

The other problems with the current methods of community-based participation in rangeland management is that most of the methods have been drawn from theories and practices of agricultural extension (Fuglie and Kascak 2001). Common among those methodologies are: Participatory Learning, Action

Research, Participatory Action Management (or PAM) (Chamala 1990; 1995) and Participatory Monitoring and Evaluation (PM&E). These methodologies were basically adapted and modified to suit the conditions of community-based rangeland management. Lack of holistic land planning, appropriate policy interventions for human and wildlife co-habitation, and empowerment of local communities has engendered the emergence and intensification of conflicts not only between herders and farmers but also with other stakeholders as well (Floyd 1993; Le Meur 2006).

Recent studies show that rangelands in many Sub-Saharan African countries are at great risk of gross malpractice (Ochola et al, 2010). In some countries the rangelands are poorly managed, neglected, and remain unprotected not only against unplanned human activities but also planned activities that do not bode well with the basics of sustainable rangelands development (TerrAfrica 2019). Addition, there is rapid expansion of human settlements, large-scale farming, mineral exploration, and land degradation (Martimore & Turner 2005). This situation has resulted into healthy rangelands being overstocked and reduced in size that affect livestock productivity due to gross disruption of the rangelands' ecosystems and carrying capacity (Kiage 2013).

A review of empirical literature by Reed and his colleagues on community participation in rangeland management in the Kalahari Desert, Botswana show that the majority of strategies reported in the studies are skewed and unsuitable for bringing about effective participation of local communities in rangeland management (Reed, Doughill & Taylor 2007). It is not that the programmes that are being implemented are a complete failure;

rather they have been failing short of the envisaged outcome. The programmes have had impressive successes on the short-run but on the long-run most of the programmes have disintegrated and collapsed after donor or government funding is withdrawn. Several explanations have been provided but the main problem has been the manner in which the programmes involve and empower the local communities. Absolute dependence on donor funding has been – and continues to be – an enormous challenge to most of the rangeland management programmes. We are not discarding donor funding but we are suggesting that donor funding should be used as catalyst or support to the indigenous initiative.

In Tanzania, several models of rangeland community participation have been used and continue to be used in attempt to achieve sustainable rangeland management. The impact of these models has varied but there is evidence that show that in most cases the interventions have had limited impact, completely failed or turned into “white elephants” (Borjeson et al 2008; URT 2014). This observation is shared by Kidegesho et al (2013) who contend that in Tanzania community participation is “ineffective” because it is less collaborative and inward-looking since it does not extend its focus to including stakeholders in adjacent and non-protected areas.

In addressing the impending threat to the survival of rangelands, the government of Tanzania has designed the *Guidelines for Sustainable Management and Utilization of Rangelands in Tanzania* (URT 2014). These *Guidelines* are aimed at “providing practical guidance on sustainable management and utilization of Rangelands as required by the Environmental Management Act

(Cap. 191)“ (op. cit.). The *Guidelines* are cognizant of the high risk of over exploitation and degradation of the rangelands (op. cit.). In broad terms, the *Guidelines* are intended to support sustainable productivity of the livestock, wildlife, and improve the security of pastoral and agro-pastoral livelihoods. The ultimate goal is to galvanize and strengthen multi-sectoral collaborations that would spur existing and future interventions in building sustainable rangeland management.

The good intentions enlisted in the *Guidelines*, have had some promising start but are constrained by intervening and cross-cutting issues. Lack of effective mobilization and empowerment of local communities has resulted into arbitrary invasion and grabbing of rangelands that has been the main trigger of bitter and bloody conflicts between pastoralist, farmers and investors. In addition to that, rapid population growth has resulted into staggering deforestation and biodiversity loss that has seen the country loosing between 300,000-400,000 ha of forest per annum (MTNRE 1989; 2018). In some parts of the country rangelands are rapidly declining or disappearing completely (Selemani 2014). Thus, the impending decline of rangeland’s productive capacity presents the greatest challenges to the *Guidelines*. The elites’ and foreigners’ insatiable drive towards owning large chunks of land pose a gasping threat not only to the rangelands but more seriously to sustainable livestock productivity and livelihood security among the local communities. The sedimentations of these changes over time has drastically been transforming the ecological conditions of Tanzanian rangelands since some areas of rangelands have been turned into semi-deserts due to deforestations and land degradation.

## **The Living Lab Methodology**

The Living Lab methodology is a research approach that is undertaken in open and user-centric innovation ecosystems in real-life settings such as urban and rural areas, towns, cities, villages, and or industrial areas. These settings are turned into “living laboratories” for multi-stakeholder collaborative research programmes that involve researchers, firms, public institutions and the people within a public-private-people partnership (Kepik et al, 2010; Dell et al, 20014). The main activities in the Living Labs include coordination of the research undertaking, experimentation of the findings, and co-creation of research prototypes. This enables the stakeholders of the research consortium to come up with recommendations and solutions on problems to be solved or opportunities to be explored for further research and benefits (Kviselius et al, 2009; Niitamo et al, 2016).

The Living Lab Methodology was mooted and developed in 2003 by Mitchell, Larson and Pentland at the Massachusetts Institute of Technology in USA. Their Living Lab at that time combined the infrastructure of the MIT School of Architecture and Planning and MIT Media Lab. Urban Living Labs was the initial focus of the Living concept which aimed at creating the “smart cities” atmosphere in which the cities’ residents are provided space to participate in the process of urban planning and execution of various development projects. At a broader context, the Urban Living Lab is defined as “...user-centered, open innovation ecosystems based on a systematic user co-creation approach in public-private-people partnerships, integrating research and innovation processes in real life communities and settings” (ENOLL, 2013). Later developments expanded the concept of

Living Labs to ICT and innovative industrial designs to venture into areas that have not been explored before.

### **The Public-Private-People Partnership (4Ps)**

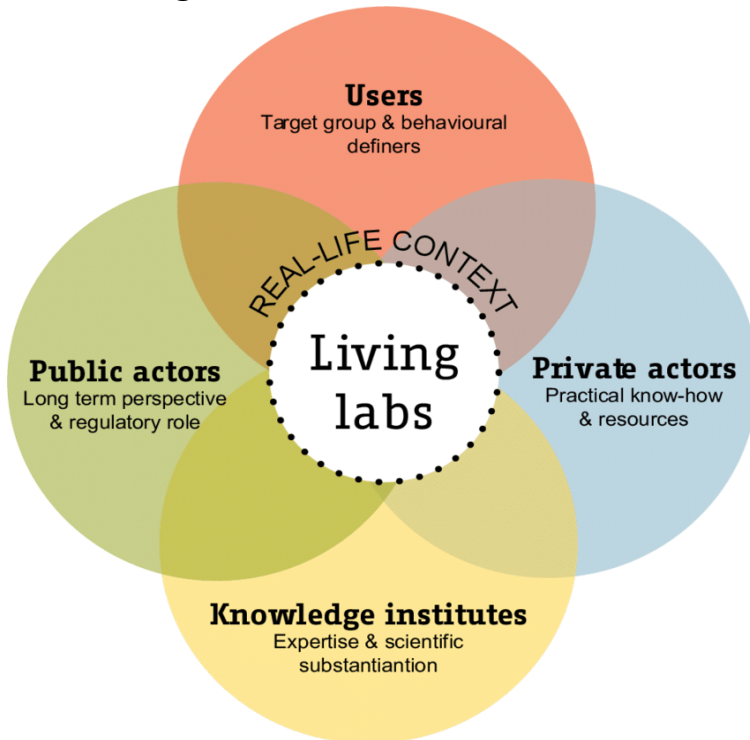
The Public-Private-People Partnership – known as the 4Ps approach - is the main pillar of the Living Lab set up (Steen & van Bueren 2017). It is a shift from “government” to “governance” since it provides a platform where public and private actors co-operate to undertake jointly development projects, programmes, and share benefits and risks (Stejn 2011). The critical point in this partnership is the inclusion of all the people, community and faith-based organizations, NGOs, and NPOs in the activities that are implemented in Living Lab projects or programmes. The ultimate goal is to increase beneficiaries’ and stakeholders’ democratic participation, accountability, responsibility, and transparency.

### **The Living Lab Stakeholders and the Public-Private-People Partnership Framework**

The participation of stakeholders in a Living Lab project or programme is constituted within the the Public-Private-People Partnership framework as shown in Fig. 1. Included in the partnership are four user groups that operate in real-life context. The first group is composed of “public actors” (i.e. urban or rural development officers) who have long-term perspective and play the regulatory role. The second group is composed of “users” who include target groups, beneficiaries, and other stakeholders. The third group include private actors form the private sector most of whom are people who have “practical know-how and resources”. The fourth group is composed of knowledge institutions (colleges, universities, research centres, consultancy firms, etc) that possess

specific knowledge, experience, and expertise fields of specializations.

**Fig. 1 The Living Lab Stakeholders**



*Source:* Kris Steen & Ellen van Bueren (2017). *Urban Living Lab: A Living Lab Way of Working*. Amsterdam Institute for Advanced Metropolitan Solutions Delft University of Technology.

### **Types of Living Labs**

There are many types of Living Labs that are being established according the sectoral needs or identified problems and opportunities. However, the most applied types of Living Labs are:

## **1. Research Living Labs**

These are Living Labs that are established to conduct research on different fields of specialization in contrast to the traditional research and development projects where the prototyped product, service or system is in focus (Brønnum & Møller, 2013). These types of Living Labs have contributed significantly to outstanding user-driven and co-creative innovation ventures.

## **2. Corporate Living Labs**

The focus in this research is on corporate business affairs devoted to those high-risk, long lead-time projects essential to basic strategic purposes (Burbridge 2016). The crucial element, however, is a balance that management maintains between research controls and the freedom and autonomy researchers require to be innovative.

## **3. Organizational Living Lab**

The in this context is on how the organization is managed and performs well. Members of the organization co-creatively develop innovations and solutions to problems. Thus, research undertaken provides an organizational structure to order the activities that give the user a more central role in the organization process.

## **4. Intermediary Living Labs**

These are Living Labs that act as intermediaries in which different partners are invited to collaboratively innovate in a neutral milieu.

## **5. Time limited Living Lab**

These are Living Labs which are established for a specific task and period as a support for the innovation process in a project. Such a Living Lab closes when the project ends.

## Common elements of Living Labs

All Living Labs have common elements that are embedded in their undertakings and the expected results. Living Labs ascribe to four main stakeholders: companies, users, public institutions and researchers. Five common elements are central to the Living Lab approach: multi-method approaches, user engagement, multi-stakeholder participation, real-life setting, and co-creation.

**Table 1: Five elements of Living Labs**

<b>Multi-method approaches</b>	<b>User engagement</b>	<b>Multi-stakeholder participation</b>	<b>Real-life setting</b>	<b>Co-creation</b>
no single LL methodology, but a combination and customization of different user-centred, co-creation methodologies to best fit specific purpose.	bottom-up involvement and empowerment of the users right from the beginning of the process	synergy involving all relevant stakeholders including all the quadruple helix actors: representatives of public and private sector, academia, local and indigenous people	LL activities take place in real-life settings to gain a thorough overview of the context.	users become equal contributors and co-creators rather than subjects of studies or programme interventions mutually valued outcomes that are results of all stakeholders being actively engaged in the process from the beginning

## **The Concept of Rural Living Lab**

A Rural Living Lab is not a laboratory building per se, rather it is a real-life context and a user-centred, open-innovation ecosystem often operating in a rural territorial context, integrating concurrent research and innovation process within a public-private-people partnership (Veeckman et al, 2013). Broadly defined, a Rural Living Lab is a platform where experts, local communities, citizens, artists, technologists, private businesses and public sector organizations come together to co-create ideas, experiment and validate new tools and technologies that will address local challenges in a rural setting (Ballon & Schuurman 2015; Westerlund et al, 2018).

In broad terms, a Rural Living Lab refers to an ensemble of set up to initiate, implement, and determines the effectiveness and efficiency of rural development projects and programmes that address the needs of rural communities or rural problems (Kalai 2018). The main focus is on the innovativeness of the strategies that are designed to tackle existing and future rural development problems in the context of environmental conservation, land use planning, rangelands management, and improvement of household livelihood security of villagers in remote and mountain areas (LIVERUR 2018). As such, a Rural Living Lab provides space, milieu and arena where reflection and evaluation are built into the working process to make sure that the Living Lab is flexible and responsive to the changing needs of stakeholders and local communities (Bergvall-Kåreborn et al, 2015).

## **The Rural Living Lab Methodology**

The Rural Living Lab Methodology (RLLM) is relatively new in Sub-Saharan Africa with the exception of Ethiopia, Kenya, and

South Africa (IST-Africa 2011; Herselman 2011; Cunningham 2012; LLiSA 2014). The roots of the Rural Living Lab Methodology (RLLM) are from the Living Lab Methodology as mentioned above. The importance of Rural Living Labs is underlined by the fact they have potential of transforming rural communities and their resources towards sustainable rural development (ENoLL 2006). The structural set-up of Rural Living Labs is designed in such a way that it builds dynamic synergy towards enhancing “circular economy” among rural stakeholders (Epi-Agri 2019; LIVERUR 2020). Through the Rural Living Lab methodology, all stakeholders are brought together to design and implement holistic and integrated development projects and programmes. The synergy that is built is synchronized to enhance optimal utilization of natural resources, local self-sufficient, capacity building and introduction of modern scientific tools, knowledge and technologies that are environmentally friendly.

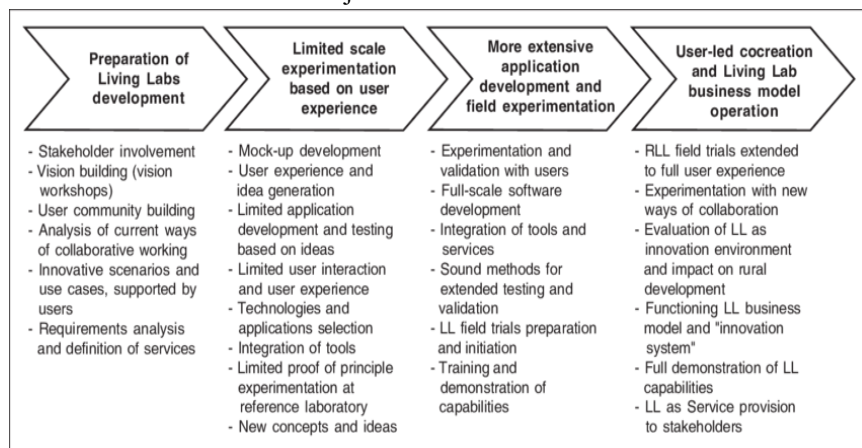
### **Setting up a Rangeland Management Living Lab (RMLL)**

The process of setting-up a Rangeland Management Living Lab (RMLL) is sequential and requires careful planning (Schaffers 2010). In practical terms, the process is not only technical, but it is also scientific, social, political, and economic. A diversity of interests should be discerned to get glimpse of the specificities of setting up the RMLL. This implies that the process requires the identification and visits to the rangelands in order to collect data and get a better view of the current situation to determine intervention entry points and the human, financial and material implications.

Then follows consultations and mobilization of the target and beneficiary groups necessary for the piloting and implementation of the intervention programmes. Pilot implementation refers to testing a system in “real life” prior to full-scale deployment. It is a powerful approach for identifying design flaws and implementation issues (Bansler 2008). Therefore, the piloting implementation stage is a significant start because it will provide input for the “fit” of the design of the RMLL and the phases in which it will be embedded as shown in Fig 2 below.

Fig. 2: Phases of Piloting Implementation of the Rangeland Management Living Lab (RMLL)

Source: Hans Schaffers and Seija Kulkk



Living labs: an open innovation concept fostering rural development, *Tech Monitor*, Sep-Oct 2007

## Intervention Focus

Rangelands are contested resources that draw multiple interests from diverse interest groups. Since the intervention is not only on

enhancing community participation, then the focus should be kept on driving changes in identified local communities (user and stakeholders) within the context of real-life settings. The bottom line is that the intervention focus entails a difficult trade-off between cost and realism. Nonetheless, empowerment is the central objective and should be integrated into the intervention approaches that will be pursued. Such interventions can be driven by coalescence of forces from different directions: top-down, bottom-up, or lateral forces as explained in Table 2 below.

**Table 2: Project Intervention Forces**

<b>Intervention</b>	<b>Millieu Platform</b>
‘Top-down’ forces	Interventions emanating from rangeland authorities who have regulatory and financial powers to initiate or enforce rangeland management programmes
‘Bottom-up’ forces	Initiations commenced by key stakeholders (pastoral and agro-pastoral communities, etc.)
‘Lateral’ forces	Initiations triggered by academic, research and professional groups such as academics, researchers, rangeland societies, conservationists, etc.)

**Key Beneficiary Groups to be involved**

A key determining factor within the Rangeland Management Living Lab (RMLL) set up is how local communities are recognized, involved, trusted, empowered and the extent to which their role, indigenous knowledge and institutions are integrated into interventions programmes. The piloting implementation should be cognizant of the fact that local communities are heterogenous and hence, there are different interest groups. These groups are expected to assume the ownership of the Rural Living Lab so that they can take more responsibilities in the co-creation process.

**Table 3: Main Users and Stakeholders**

<b>Beneficiary Group</b>	<b>Demographic Characteristic</b>
<b>Community Members</b>	These are the people who are most affected by the pilot actions in the area and are mainly residents: herders, farmers, hunter-gatherers, workers, and small size family business owners.
<b>Stakeholder organisations</b>	These include: property or business owners of local assets, service providers (shopkeepers, tourism & leisure), other interest groups with a stake in the decision-making process, and knowledge holders/experts in rangeland management, freelance consultants, local NGOs, CBO, civil society, cooperatives, farmers' associations, community house members etc.
<b>Policy and public service organizations</b>	These organizations include local government or other organizations with some formal responsibility.
<b>Broader beneficiaries</b>	These include localö/regional and national authorities and other policy-making bodies, professional institutes, academic networks, NGOs, LGAs etc.

### **Collaborative Innovation (CI)**

Innovation and co-creation of new approaches are a key preoccupations in the Rangeland Management Living Lab (RMLL). Collaborative Innovation (CI) is a process in which the key stakeholders are brought together over shared vision and mission. Thus, in the context of setting up a Rangeland Management Living Lab, this process will enable the user communities (pastoral, agro-pastoral, hunters) and stakeholders to come up with new ideas that will improve their current knowledge, technologies and skills on rangeland management (Ståhlbröst & Lassinantti 2015). The importance of engaging users and stakeholders in the collaborative innovation process is

underlined by four factors: capabilities, organizational ambidexterity, pro-innovation culture and strategy (Nieminen 2018).

### *Capabilities*

The capabilities of users and stakeholders are critical factors in the realization of the goals envisioned by the Rangeland Management Living Lab (RMLL). This revolves primarily around improving the existing abilities of users and stakeholders both as individuals and interest groups. Within the Living Lab context, this process refers to capacity building through skills training and enhancing indigenous **insights and know-how**. **Thus, tailor-made practical training programmes are designed to address the knowledge gaps and skills demands among users and stakeholders** within the ambit of the the Rangeland Management Living Lab (RMLL) framework.

### *Organizational ambidexterity*

This refers to the ability of a Living Lab to organize innovation activities more efficiently and effectively while adapting to current and future undertakings. Organizational ambidexterity in Living Labs may be multiple in structure as anchored in the context of inter-organizational functions that articulate R&D marketing, structural and attributional interactions that determine whether or not the collaboration is between current, new, similar or dissimilar partners (Lavie & Rosenkopf 2006). This means that the Living Lab is structured in a way that it allows users and stakeholders to collaborate in finding sustainable solutions to existing problems or demands for change in handling the existing situation.

### *Pro-innovation culture*

Pro-innovation culture is the hallmark and *raison d'être* of the whole ensemble of a Rangeland Management Living Lab (RMLL). A well established Living Lab usually embraces a multi-faceted and bottom-up innovation approaches. Partners to the Rangeland Management Living Lab (RMLL) are considered to be equal and encouraged to be innovative and creative. It is always made clear to the partners what is being pursued, why, their contributions and expected benefits. Thus, main and specific goals are collectively prioritized, agreed upon, and appropriately resourced on an ongoing basis. The Living Lab facilitates the partners the opportunity to experiment and validate new ideas, products and services.

### *Implementation Strategy*

The involvement of the users and stakeholders need a well defined strategy to delineate the responsibility of each group. The essence of the strategy in piloting the implementation of the Rural Living Lab is that it maximizes opportunity all-around by bringing together users, stakeholders, partners and collaborators to generate innovative solutions to the prevailing challenges that engulf rangelands and surrounding areas. The implementation strategy outlays the action plans to be executed with the framework of short and long term scope.

### **Financing the setting up of Rangeland Management Living Lab**

Financing is a critical factor in the setting up of the Rangeland Management Living Lab (RMLL). Therefore, pioneers considering setting up innovative rangeland management living

labs must draw up financing plans to map out strategies for taking advantage of integrated new opportunities related to the RMLL. The financing plan should demonstrate how fully they have researched their proposed RMLL and how to manage financial risk. The financial plan should indicate partners, sources of funding, operational and development programmes that could link-up with new ventures such as organic agro-pastoralism, rangelands products processing, direct marketing and rangeland tourism. Approaching organizations like IST-Africa, ENoLL and other donors could lead to securing funding or establishing collaborative partnership.

## **Conclusion**

This paper has presented the rationale for using the Rural Living Lab methodology as an alternative strategy to the current models of community participation in rangelands management. The Living Lab methodology - though still very new to many Sub-Saharan African countries and local communities – “fits” well in bringing sustainable rangeland management in Africa. Local communities living adjacent to rangelands and rural areas are confronted with diverse conservation challenges that undermine their resilience to be either adaptive or abandon pastoralism and become farmers. These communities have rich indigenous conservation knowledge, experience and skills that need to be improved to adapt successfully to the changing that concerted efforts are needed to promote the conditions that are taking place in their respective rangelands. But the indigenous knowledge and experience is outdated in some cases. Therefore improvement of indigenous

rangeland knowledge and skills can be efficiently enhanced through the Rural Living Lab methodology. This implies rural living lab methodology because it has great potential in catalyzing the development of sustainable rangelands management in rural areas.

The rural living lab methodology is not presented as a panacea to the current deficiencies in rangeland management, not at all! The remit is that rangelands problems in Africa are increasingly expanding and are becoming way too complex to be addressed by traditional and conventional approaches that are less effective in addressing current demands for efficient community participation and empowerment. Available evidence show that efficient and effective involvement of local communities in rangelands management has great potential not only for the conservation and rehabilitation of rangelands, but also for the attainment of high quality production of meat and milk, forage harvests, and sources of reliable water supply. Thus, the Rural Living Lab is an empowering process by which local communities gain control over the factors and decisions that shape their livelihoods in and around the rangelands.

Furthermore, the methodology provides ample room for co-creation, innovation research, prototype experimentation and continuous evaluation of the projects that are implemented. Through the Rural Living Lab framework local communities increase their assets and attributes and build capacities to gain access, partners, networks and register their voices in the management of rangelands. The public-private-people-partnership is a unique framework of co-operation in which the collaborators are accountable to

each other and to society for the purpose of addressing the identified problems and needs within the rangelands. This arrangement thwarts off the “white elephant” syndrome that is typical of many community-based projects in Africa.

Research in this paper has been inspired by the declarations enunciated in the 8<sup>th</sup> Africa-EU Strategic Partnership, Second Action Plan (2011-2013), IST-Africa White Paper titled: “Supporting the Evolution of Sustainable Living Labs and Living Labs Networks in Africa”, and the establishment of the EC – AUC Living Labs Task Force for Africa. Therefore, it is hoped that funding for further research for this study will benefit from established Living Labs programmes and funding sources operating in and outside Africa.

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