Matching the urban needs for inclusion, sustainability and local value creation by a systemic innovation?

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The case of Smart Community, Namibia

Abstract

This paper will present a case of the Smart Community in Namibia; a systemic innovation that aims at providing a more sustainable model for urban development and housing. The goal is, through an empirical case, to analyze the important concepts of inclusion, sustainability and local economic development and how these could be fostered in the context of Southern African urban development. The paper is also interested in obstacles faced in introducing and implementing systemic innovations, and governance of such undertakings.

Introduction

Urban challenges in Africa

Many of the present day social challenges and social planning problems could be characterized as "wicked" by using the term coined by Rittel and Webber (1973). Such problems are characterized, for example, by (ibid.; Conklin 2005) the following characteristics. Wicked problems are permanent; they do not "go away", in other words, they are never solved definitively. Problems are always unique and there is no single right answer to them. The solution depends on the framing and interpretation of the problem and vice versa. Furthermore, stakeholders have substantially different interpretations of the problem characters.

Currently we can talk also about "super wicked problems" (Levin et al. 2012) like climate change. These problems can also be referred to as "Grand Challenges" (e.g. Cagnin et al. 2012). More generally we can also observe that our social systems are increasingly complex so that, for example, solving major problems cannot take place by focusing solely on one system at a time: the challenges are highly systemic (e.g. Helbing 2013).

Based on these observations, there emerges also a need for inclusion of various perspectives and understanding of the impacts of actions from various perspectives – a need for various engagement activities (e.g. Rittel & Webber 1973; Ackoff 1974; Concklin 2005). Solutions that are needed can often be characterized as systemic innovations, combinations of various elements that are at least to some extent interdependent. Consequently this also raises up a need for a combination of various competences that are often diffused among various actors operating in different sectors, therefore creating a need to connect together actors of different type. Governance of such types of ventures may be challenging.

Successful governance of accelerating urbanization in Africa is a key process in terms of both positive economic and social development of the continent. One of the major systemic challenges in Africa bases on the observation that growth of cities will foster the economic development and growth in the continent. Current accelerating urbanization supports the economic development, but low quality of infrastructure and urban planning hinder the positive socio-economic impacts of the process, as the negative externalities of agglomerating population exceeds its benefits.

Africa's population will continue its radical shift from rural to urban areas; in 2010 urban dwellers made up nearly 40 percent of total population, and estimation for 2030 is 50% and for 2060 65%. (African Development Bank 2011). The urban population of Namibia has been increasing from 28% in 1991 to 33% in 2001 and subsequently to 42% in 2011. As everywhere in Africa, also in Namibia cities act as nodes through which development occur and simultaneously rapid urbanization poses risks that affect sustainable livelihoods of people. (Indongo et al. 2013)

Africa's need to create urban economic agglomerations to support three times the current population in 2050 is a systemic problem. Industrialization is declining whilst the service sector is growing fast and unable to cater for the employment demand. Africa is urbanizing with a lower GDP per-capita than other regions, with negative basic constraints such as unemployment, social exclusion, and poverty. (UN-HABITAT 2015)

Big cities with feasible quality of living would foster the growth in Africa, but size of the major cities is too small. African Development Bank even reminds that size of the cities is directly linked to the their economic capability to develop; each time the size of a city doubles, the productivity of the activities within it increases by around 4-8 percent. The rise of the vibrant cities is closely linked to domestic sales and the rise of the middle class, improved telecommunications, banking operations and the development of infrastructure in general. (African Development Bank 2011, 35) For example, Windhoek in Namibia alone is estimated to need urgently 10 000 new apartments, only to alleviate the soaring prices of apartments in the city.

Positive development of growing cities requires profound renewal of urban planning practices, including use of more transparent and inclusive methods locally, and co-creation with international planning teams. The quality of planning process and its inclusive and participatory practices play important role in production of socially and environmentally sustainable urban environment. Further, urban development takes place increasingly in co-operation, or being in charge of international partners (e.g. China donated the African Union building in Ethiopia, and have created funding solutions for African governments that enables Chinese organizations to implement large-scale development projects, like highways and harbors). Therefore, planning capacity related to orchestration and co-creation processes in international projects is a central question in African development as well.

The risk is that rapid urban growth will take place in a largely unplanned manner. Very few African cities have municipal governments capable of thinking through the complex set of coordinated decisions needed to deal with explosive urban growth. National governments have similarly failed to come to grips with the urban challenge. (African Development Bank 2011)

A shortage of urban planning and management professionals trained to respond to urban complexity with progressive pro-poor approaches exacerbates urban dysfunction. As planning educators seek to train students for employment within the existing system, the urban and rural planning curricula of many planning schools are as outdated as planning legislation. (African Research Institute 2013)

Also climate change, in addition to socio-economic concerns, places a challenge. The low quality of urban planning or no planning at all (no streets, no drainage system, built on slopes) is very susceptible to impacts of climate change as well and prone to catastrophes.

Large-scale development projects are often planned and implemented in co-operation with foreign partners. Process may benefit from development of interactive and inclusive planning practices. This concerns local African planners and decision makers as well as local citizens, firms and NGOs and other communities, in order to provide feasible social and environmental conditions for the city-environments.

Therefore, three main challenges emerges from increasing urbanization in Africa:

- There is high demand for housing and failures in housing projects
- Many housing projects do not benefit the local economic development in full
- There is a need to build socially and ecologically sustainable communities.

These points of departure led into designing a concept that was eventually named as Smart Community (SmartCom in brief). The concept was decided to put into practice as a business process, a systemic innovation promoted by initially several Finnish companies later to be joined up by several Namibian partners. In addition, it was deemed necessary to back up this business process by a research project that would, in a fashion of a participatory action research, study the needs, preconditions and development opportunities related to the implementation of the SmartCom concept. The original research teams were composed of researcher from the University of Tampere (UTA), Finland, and VTT Technical Research Centre of Finland (VTT), but accompanied also by their Namibian counterparts, the University of Namibia (UNAM) and the Namibia University of Science and Technology (NUST). The research project is financed during the period of 2016-2018 by the BEAM program of TEKES (the Finnish Funding Agency for Technology and Innovation) and the Finnish Ministry of Foreign Affairs as well as by UTA and VTT and the participating Finnish companies.

Goal and organization of the paper

This paper will present a case of the Smart Community in Namibia; a systemic innovation that aims at providing a more sustainable model for urban development and housing. The goal is, through an empirical case, to analyze the important concepts of inclusion, sustainability and local economic development and how these could be fostered in the context of Southern African urban development. The paper is also interested in obstacles faced in introducing and implementing this systemic innovation.

The paper conceives SmartCom concept as a systemic innovation and will discuss the concept of a systemic innovation as a necessary response to "wicked problems". As the SmartCom concept is seen as a new model for urban development and housing, it can be considered as a "niche innovation" using Geels's term (Geels 2004, Geels and Schot 2007) that, among several niche innovations, may challenge the existing regime of urban development and housing. Consequently, the paper deploys the sociotechnical transition approach (ibid.) and attempts to test its usability in a new context.

The paper first introduces a concept of Smart Community and continues then to discuss the theoretical concept of a systemic innovation. After this, the sociotechnical transition and transition management approaches are presented and shortly discussed in the light of the SmartCom case. The paper then proceeds to the actual case description and analysis to discuss, based on an ongoing study, the aspects of inclusion, sustainability and local economic development. Finally, the paper comes up with the discussion and conclusion section to draw the preliminary lessons together.

Smart Community: a systemic innovation

Smart Community concept

Above, three main urban challenges were outlined that are in need of innovative solutions. In the following, a concept will be outlined that takes these challenges into account. Alone, none of the three applied solutions is very innovative but has actually many times been put into practice. The point here is to successfully integrate the three solutions. The initial set-up can be seen as pictured in Figure 1.

Concerning the problems in housing programs, an obvious response is *co-creation* (see e.g. O'hern & Rindfleisch 2010). This means testing and developing methods and technologies with local actors to enhance engagement, competence building and to achieve quality outcomes in implementation. As co-creation intends to engage all relevant stakeholders into processes of innovation, it may be conceived that co-creation as a method could work for the purposes of *inclusion* in the developing countries. Participatory development (PD) approach has been influential since 1970s as a methodological perspective how to foster development by engaging the local communities in designing and constructing their own futures (see e.g. Chambers 1994). Thus, there seems to be a continuum from participatory development approach to co-creation.

Concerning the often weak impacts of the housing projects on the local economic development, it is evident that a holistic approach calls forth for *enhanced local value creation*. This means an increased use of local materials as well as more use of local companies as builders, designers and other service providers. In addition, this call for competence-building among these actors which may be partly achieved through intensive mutual learning between the local and external actors (c.f. e.g. Malerba and Mani 2009; Pietrobelli and Rabellotti 2011).

There is also a need to build socially sustainable communities to alleviate the wicked urban problems such as unemployment, lack of social cohesion, crime, pollution, lack of services and urban infrastructure (e.g. transportation), and so forth. This calls for an *integrated social development:* Services integrated to the community; social space for different groups; efforts to enhance cohesion of the local community, and related competence building of a self-sustaining characteristics, among other aspects.

In addition, *smart technologies* will be introduced along the process. SmartCom approach is a comprehensive (urban) development model that integrates social and economic services, local economic development and community building goals to housing provision. In other words, Smart Community resembles the Smart City approach which fosters a broad social, economic and environmental sustainability in urban development. However, Smart Community is an application for solutions on a smaller scale and is especially targeted for the less advanced regions, with more emphasis on social and economic sustainability ("smartness in people") than on technology and digital solutions ("smartness in technology"), as is the case in most Smart City solutions (e.g. Nam & Pardo 2011; Hollands 2008).
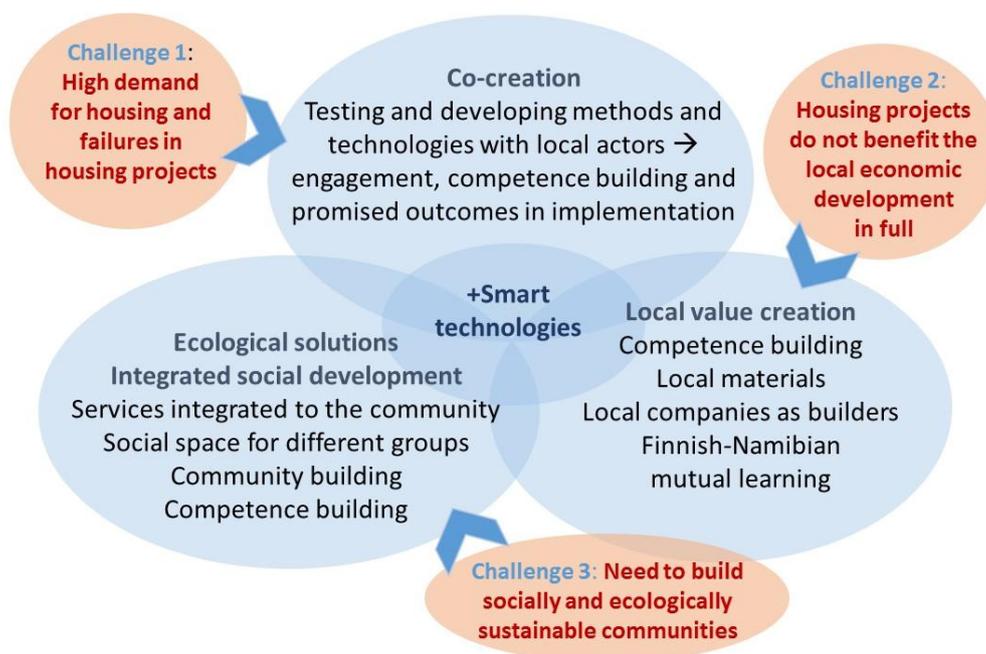

Figure 1. Three main challenges and integration of their respective solutions according to the Finnish-Namibian SmartCom concept.

In a nutshell, Smart Community Consortium aims to promote sustainable solutions for urban planning, affordable housing and holistic community development to respond to challenges of urbanization. The consortium consists of Finnish and Namibian companies in construction, urban design, social and health care services. In addition, there are Finnish and Namibian research institutions studying the preconditions, problems of implementation, and inclusive methods. The paper will use the case of SmartCom from here onwards as an empirical object of analysis.

Case of Smart Community

The first actual urban area to be build according to the Smart Community concept will be located in *Keetmanshoop* which is a central town in the Southern Namibia (Karas Region). The reason for this location

is the town's pioneering spirit regarding new pilot projects. In the beginning of the project, several local governments were contacted and there were many negotiations on implementation of the SmartCom concept (some of these are still going on). Before the urban area will be built, the research project analyzes preconditions, opportunities and development needs in a co-creative manner together with key stakeholder groups.

As a basic *methodological approach*, the SmartCom will deploy *participatory action research* (PAR). PAR contrasts with many research methods which emphasize disinterested researchers, reproducibility of findings and observation of human behavior in the hope of eventually emerging meaningful change without researchers' intervention. Instead, PAR emphasizes participation and action and intends to make sense of the world through collective efforts to change it. Research is conducted with people instead of "on" or "for" people, in a collaborative manner that suits especially when the object of the study is co-creation processes and how to promote them.

According to Greenwood and Levin (2007): "Action research is social research carried out by a team that encompasses a professional action researcher and the members of an organization, community, or network ("stakeholders") who are seeking to improve participants´ situation. Action research promotes broad participation in the research process and supports action leading to a more just, sustainable, or satisfying situation for the stakeholders." In action research the problem is defined and examined together by the team consisting of the researcher and other stakeholder involved. Importantly, action research democratises the relationship between the researcher and the rest of the members involved in the research process. This is based on a view that all people accumulate, organize, and use complex knowledge continuously in everyday life. (ibid 3-4.) Characteristic to action research is that it has usually been a more practical way of doing research: the research is conducted in the field than in laboratory settings and it is often practiced more due to practical rather than theoretical reasons (Willis & Edwards, 2014, 3).

Concerning *data*, the co-creation activities have been launched by conducting focus group interviews which will provide a main source of data. Before these activities were launched in February 2017, the research project gathered data in many other ways. One important source have been existing literature and documentation related to, for example, African (Namibian in particular) urban development, planning and design and its current state of affairs; national and local governments' policy documents, statistics, and other formal documentation. Another key source prior to co-creation activities have been individual and group interviews conducted in Keetmanshoop and in Windhoek, the capital city, with different kind of stakeholders representing public, private and third sector. There are approximately 30 interviews of this kind.

In Smart Community project, co-creation activities were launched by conducting a focus group study (ongoing) that explores the following topics:

- What is a feasible price range for the houses – affordable to middle-income group in Keetmanshoop
- Housing styles and alternatives – acceptance of new solutions and materials in housing
- Social and cultural sustainability of the neighborhood – safety, diversity and community-building solutions
- Needed services for a Smart Community.

Focus group interviews were conducted with the following groups in Keetmanshoop:

- Potential dwellers (appr. 10 persons)
- UNAM final year students (8 persons)
- UNAM Faculty/staff members (3 persons)
- Social and community development workers (4 persons)
- Community leaders representing different parishes (4 persons).

Also discussions with town planners and council members were conducted to find out their expectations and views related to the Smart Community concept. Earlier, meetings had been organized with several representatives of local businesses to find out about the possibilities of local production of materials and construction work. FABlab (NUST, Windhoek), Demola (affiliated to NCRST, Namibia Council for Research, Science and Technology, Windhoek) and UNAM (Keetmanshoop campus) were visited and their co-creation approaches mapped.

Focus group meetings were recorded and notes made. Empirical material and first insights were then discussed among the research team, and some relevant statistics were added.

What is a systemic innovation?

Next, the characteristics of a systemic innovation need to be discussed. Along increasing complexity of the markets and societal challenges, innovations increasingly assume a form of systemic innovation meaning that, in contrast to autonomous innovations, these innovations only generate value when combined with complementary innovations (Chesbrough & Teece 1996, 2002; Maula et al. 2006; Takey & Carvalho 2016; Colvin et al. 2014). Systemic innovations require interrelated changes in many activities or functions such as product design or IT systems (Chesbrough & Teece 2002). According to Spohrer & Maglio (2008), systemic innovations face the challenge of "interdisciplinary nature of service, integrating technology, business, social and client (demand) innovations". In other words, these innovations arise as a response to the increasing complexities of present-day societies.

As outlined earlier here, the SmartCom concept has a close identity to a systemic innovation. It attempts to respond to several intertwined challenges of urban development. It consequently also integrates different competences in its implementation, including (but not limited to) the following organizations:

- Aihio Architects Oy (Finnish) is specialized on architectural design and urban planning
- A-insinöörit Oy (Finnish) operates in the construction engineering and management
- Lithon Developers Ltd. (Namibian) operates in the construction engineering and management
- Earth House Systems Oy (Finnish) produces quick access building solutions with affordable prices
- Sopimusvuori Oy (Finnish) is a provider of healthcare and social services
- Pro Edge Steel (Namibian) a producer of metal structures for the construction industry
- CosDec (Namibian) vocational education institution
- Namibia University of Science and Technology (NUST, Namibian), in SmartCom specialized in urban design and construction
- University of Namibia (UNAM, Namibian), in SmartCom specialized in urban geography and sociology
- VTT Technical Research Centre (Finnish), in SmartCom specialized in engagement and co-creation methods
- University of Tampere (Finnish), in SmartCom specialized in inclusive innovation and ecosystem development.

The extensive list of partners immediately brings forward a question on coordination of a network. This has been a controversial topic also among the scholars. While Chesbrough and Teece (1996, 2002) pronounced a need for a hierarchical style of management, some other authors such as Maula et al. (2006) and Vesa (2006) were in favor of a more open, diffused management of a network where different stakeholders have different coordinating roles. The difference may be explained partly by the fact that while the former focused on manufacturing, the latter focused on services where there are, among other things, many indivisibilities and fuzzy boundaries to deal with, thus making it more difficult to maintain a hierarchical control. In Smart Community network, the management structure is certainly fairly diffused but has also already within a relatively short period of time seen some transformation in organizing the network.

Aiming at a systemic transition

Sociotechnical transition approach and transition management

As a whole, the SmartCom concept can be seen as challenging the existing building and housing regime in Namibia (and beyond in Africa). On a macro-level, the transition towards a more sustainable regime can be modelled using concepts provided by the sociotechnical transition approach (e.g. Geels 2002, 2004, Geels and Schot 2007). The key elements are illustrated in the Figure 2.

The idea of socio-technical change as a theoretical perspective to understand change in multi-actor contexts is based on the work of a group of Dutch researchers (e.g. Loorbach & Rotmans 2010; Kemp et al. 2001; Kemp et al. 1998; Rip & Kemp 1998) with the ideas of niche management and transition management. Here, theoretical background is especially on the ideas of complex systems theory, structuration theory and evolutionary economics.

The approach describes and explains change in complex socio-technical systems by the so-called multi-level perspective (MLP): the theory emphasizes complex interactions between actors, resources, institutionalized practices and regulation in a system as a necessary precondition for change (Geels & Schot 2007; Geels 2004; Geels 2002). The model introduced by Geels (ibid.) consists of three levels: landscape, regime and niche innovations.

In the centre of the model, there is the so-called regime level, which combines institutionalized practices, structures, and self-evident action patterns. The regime level itself consists of five dimensions: available and used technologies, scientific institutions and paradigms, politics and administration, socio-cultural values and symbols; and users and markets.

Landscape level is the wide socio-technical context surrounding the regime: general societal values and norms, political changes, economic fluctuations, society's infrastructure et cetera. If the structures and action models in the regime are not compatible with the landscape, the regime confronts pressure to change. This may open up a window of opportunity for attempts to reform the regime.

Niche level refers to innovations and experiments taking place outside the regime. These innovations have the potential to reform or transform the existing regime. Niche could include a small niche market, or a protected and publicly supported segment where a new innovation can be developed without fierce market competition which might destroy it. The model assumes that a change in a system is possible only through the interactions of all three levels.

Figure 2 attempts to capture some essential elements of the Namibian urban development and housing context and positions SmartCom case as one of the niche innovations that may manage to transform the existing regime if there is enough pressure for change also from the landscape level, opening up a window of opportunity for the niche innovations to be diffused.
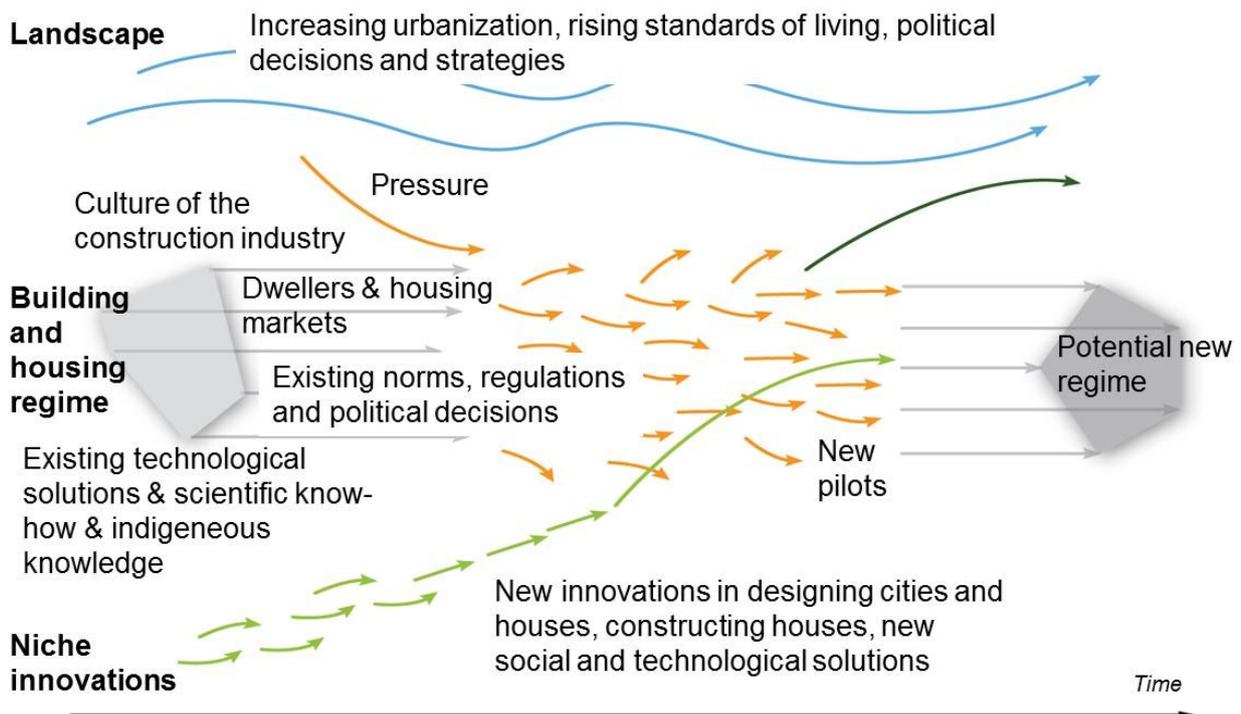
Figure 2. Sociotechnical transition (Geels 2002) modified for a context of the Namibian urban planning and construction.

The SmartCom project (business and research projects combined) applies the ideas and experiences of transition management (TM; e.g Loorbach & Rotmans 2010; Loorbach 2007). The basic idea of TM is to create platforms in which focal actors are engaged to create common visions, and to act and learn. The change begins with small pilots, which, if successful, are then disseminated and applied in a wider system. Ideally, this forms an iterative circle of communication, action and learning among actors. This serves as a starting-point for the creation of "transition arenas" by identifying, prioritizing and elaborating relevant development targets in collaboration with the stakeholders. The next phase is the co-creation and piloting of new solutions with the stakeholders, followed by the evaluation of and learning from pilots. The final phase includes wider dissemination of successful practices.

Preconditions for the SmartCom implementation

Some of the key points of departure to implement the SmartCom concept in Namibia can be briefly summarized as follows. First, Namibia is one of the most unequal countries regarding the income distribution despite its upper middle income status in Africa due to fairly high gross domestic product per inhabitant (World Bank 2012). Very high rate of unemployment is one of the major reasons for this problem. According to ILO (2014), youth unemployment has been as high as 55-60 per cent during the recent years.

On the other hand, the country possesses considerable resources and the recently elected President Hage Geingob has initiated a national development program called *Harambee* Prosperity Plan for the period of 2016-2020 in which a great emphasis has been put on inclusion as well as on infrastructure development including an extensive housing program. Namibia also possesses resources for knowledge-based development including the two major universities, UNAM and NUST as well as other educational and R&D institutions. This provides a good ground for a systemic innovation to take place in extensive collaboration between numerous organizations of the two countries.

An interesting feature related to the SmartCom project is also an existence of a long tradition of Finnish-Namibian collaboration. During the 1900th centure, Finnish missionaries came to the northern part of Namibia, Ovamboland, and besides missionary activities, established schools and hospitals, too. Later on this collaboration has continued over the decades until the present day, including intensive collaboration of UTA with UNAM and NUST. A major example is the independence process of Namibia in which the United Nation's Special Representative was a Finnish Martti Ahtisaari who later become a President of Finland and received also a Nobel Peace Prize in 2008. All this have resulted in a considerable mutual social capital that often enables a smooth start for a collaboration.

Regarding the urban design and construction of infrastructure and housing, Namibia's formal procedures of planning have a close identity to those of Finland's. This is because the Finnish (and German) organizations have had extensive collaboration over the years to develop the procedures and expertise together with their Namibian counterparts. This partly facilitates the implementation but partly also make it somewhat slow as there is quite a lot of time-consuming procedures in, for example, coming up with a town plan or a building permit inherited through collaboration.

Inclusion, sustainability and local value creation: a snapshot

From the beginning of the research project until present, the key insights gained through the study can be shortly presented and discussed here. It is important to stress here that the analysis of the existing data has just begun and new data is continuously gathered. Therefore, the following is not a result of a systematic analysis but instead a snapshot of some of the key insights.

Concerning *inclusion*, the project was launched with a very idealistic idea to provide good quality urban environment and housing especially for poor people or people with low incomes. During the first months of the project, however, the consortium encountered a Namibian reality. In the capital city, many key political stakeholders convinced the group that it is not a good idea to start with the poor: "Why would you build for those that cannot get a loan from a bank to buy a house?" or "If you build for the poor first, the middle income earners will not be interested to buy the houses with the same name". It became also evident that, despite the Harambee Prosperity Plan and the housing program, there will be a long process of releasing public funding for housing of the disadvantaged groups despite the "war against poverty". The group had to alter the original plan and began to plan on a basis that the middle-income earners will be the first target group to begin with, to get the process going on. It was thought that the low-income segment can be served later when there is some evidence existing on the functionality of the concept.

There have been enthusiasm towards co-creation as a method in Namibia. Common people mostly welcomed the idea that they were given a chance to be heard. In the first round of the focus group study, it turned out fairly easy to invite people to participate into the sessions. We have to take into account, nevertheless, that among these people there are many who have waited for a long time in a housing queue and it may be that some of these people thought these events are their chance finally to get into negotiations on their own house. This kind of hidden message was, of course, tried to avoid to our best abilities. We may conclude that there seems to be a pitfall with co-creation: it may generate expectations (unintentionally) among the stakeholders, including the marginalized groups, that are hard to meet or even worse, to become aware of by the organizers of co-creation activities. Such expectations, if not met, may lead to increase of pessimism and marginalization. As one of the participant into a focus group interview, who had waited seven years in a government's housing queue, put it: "just build those houses, please!"

Concerning *ecological sustainability*, there is a fairly progressive attitude for new solutions as long as they come at a reasonable price and pay the investment rapidly back. The purpose is to reduce the overall living costs by the use of the renewable energy sources. Solar panels are widely used for energy production, and

thus sustainable (solar) energy sources are not a distinctive factor as such but instead more like business as usual. There are also modern waste management systems quite widely in use. In Windhoek, Habitat Namibia is a test site for potential new technologies.

As far as *social sustainability* is concerned, the focus groups did not come up with any considerable hesitation on social or cultural diversity even though there are numerous different ethnic groups in Namibia. Big differences in socioeconomic status was not considered desirable in close proximity but it was, on the other hand, brought up that there are often rather poor and fairly wealthy families living next to each other due to a long-term development where the latter has become rich eventually, in which case that was considered as a natural phenomenon. Drug and alcohol abuse was mentioned often and it was conceived desirable to not let "shebeens" (small informal bars offering alcohol) being established in a Smart Community urban area to avoid the probable social problems.

Security appeared as a key issue. Crime rate is increasing in Namibia and consequently there is often established the so-called neighborhood watches, i.e. voluntary groups of dwellers patrolling their own urban areas during the nights. These were considered favorably in the focus groups. There came out numerous items and ideas how to increase security in an urban area, such as street lightning, pedestrian walkways, alarm systems, and so forth.

There was a lot of talk on *community* and *social cohesion* and how to generate common identity within a neighborhood, to integrate the dwellers into their respective areas and to foster togetherness, social cohesion. On the other hand there were many who preferred to build high walls around their plot to isolate themselves from the surrounding environment and to make their plots to feel safe. Common activities within an urban area were mostly limited, among adult generations, to church visits on Sundays as there were not much possibilities to other common leisure time activities. Younger generations have usually some leisure time options such as football and other sports. Shared public spaces were often considered as important for, for example, *braai*, i.e. having barbecue and sitting around a fireplace together.

A positive aspect in many of these findings and ideas is that they do not demand much funding but instead new forms of social interaction. On the other hand, these social innovations may sometimes be difficult to nurture. It is obvious that, in order to succeed, they must to a great extent be initiated and implemented by the local community itself.

Fostering *local economic development* through the implementation of the Smart Community was discussed with local policy-makers and representatives of the local businesses, among some other stakeholders. It was considered important that the community will be designed to support the everyday needs of inhabitants (e.g. child care). In addition, it will be designed to encourage interaction and community involvement. For this purpose, there is an attempt to deploy smart technologies besides social innovations; Recently UTA researchers gave a challenge to a student group of the Demola Namibia (open innovation platform powered by NCRST) to come up with a mobile solution for communication within an urban neighbourhood.

Increasing the local added value was seen crucial by the key stakeholders. A direct impact of using the local workforce is that the salaries will make the workers' families better off. Training on the job for the local people means that the workers will have new skills providing them with better job opportunities in the future. It also enables workers to start their own business later.

Implementing SmartCom as a systemic innovation

Concerning the SmartCom consortium, during the process it has become evident that the private partners mostly have realistic expectations and they have a readiness to accept initially small profits, thus operating

mostly on a long-term perspective. This, however, varies as the larger companies in general have more resources and consequently more opportunities for a long-term perspective.

The consortium have also faced a fact that there are difficulties in communicating rather abstract benefits of the SmartCom concept to decision-makers, dwellers and other stakeholders. The housing price is a rather straight-forward mechanism to make buying decisions but when there are some more intangible costs such as common park areas, good quality sewage facilities, and so forth, embedded in the price and making it higher, other competing options (based only on a construction of a house) become easily more attractive. Therefore, a systemic innovation consisting of a wider package of physical and intangible elements (service offering) is challenged to prove its worth when not familiar beforehand.

One of the interesting aspects of a systemic innovation is related to the intellectual property rights and IPR management. While in systemic innovation the essence is often in the intertwined and interdependent characteristics of the provided innovation, it seems as if the best protection would be the complexity. During the process of gathering together a required network of actors, managing a governance of such a network and generating knowledge for a systemic innovation, the accumulated knowledge and network relations provide to some extent an entry barrier for new competitors or at least generate some lead time for the initial coalition to operate. On the other hand, if the initial coalition manages to establish its solution without much formal IPR, it may also be possible for new entrants to enter into competition. In terms of socio-economic transition, this would create a chance for a regime change.

Discussion and conclusions

Regarding the limits of the study, this paper is the very first academic one dealing with the ongoing business and research process. Therefore, it cannot be based on a thorough analysis of data or describe the final outcomes of the empirical process or the final theoretical contributions drawn from it. A considerable part of the value-added benefits the researchers of the project themselves due to a possibility to reflect their own work. Nevertheless, it is hoped the paper is also able to communicate ideas and insights gained so far for other scholars of the field. It goes without longer discussion that the typical limitations of a participatory action research are embedded into this paper, too.

Inclusive innovation and co-creation approaches seem to match fairly well with each other, even though their academic backgrounds are different. However, there remains a permanent problem with both regarding the participation into activities; how participants are gathered to co-creation events, who will come and why, who tend to be left outside and why (due to lack of resources, etc.), and so forth. It is evident that there is never a chance to hear all the voices (but maybe in some cases where the number of potential participants is very small).

As an outcome of the first co-creation processes in the SmartCom, it has become obvious that the citizens are mostly very willing to voice their opinions, at least if given a chance for a confidential exchange of opinions. The project finally aims at, as mentioned, to come up with a transition in urban design and planning regime, first in Namibia and hopefully later in some other Southern African countries, too, to enable more transparent and inclusive practices.

The paper has outlined a kind of a wicked problem that include several different kind of intertwined problems that demand a combination of various knowledge. In addition, this paper has presented an empirical case in which a systemic innovation has been introduced to encounter this wicked problem. This systemic innovation requires various competences to be combined and to be implemented in a transnational context that further

sets up new challenges (different institutions etc.) yet also provides an opportunity to gain enough resources to overcome this wicked problem. One of the interesting dimensions in the consortium is also a collaboration between business firms and research organizations, in order to increase the capacity to not only solve the more technical problems but also to solve problems related to a governance of such a challenging undertaking.

The project, so far, has showed that the housing regime has some challenging characteristics that tend to result in increase of poor-quality housing. These include an undeveloped financing system and a lack of a funding scheme for social housing. Concerning the recently initiated housing programs, the problem has often been a low quality of the new urban areas with not much emphasis on ecological or social aspects. Consequently, this has led to many ecological and social problems. In Namibia, there exists expertise in these fields, on the other hand, but these are not too often connected to solve these problems due to a rather fragmented construction regime.

Another problem has been an undeveloped construction sector in a sense that much of the expertise, material inputs, and even manpower has been imported even though there would be potential to a considerable increase of national and local added value. Often these foreign-led projects have very limited impacts on local economic development. The SmartCom project study the opportunities to extend the local value added in construction and related industries. As presented here earlier, the project has already managed to begin to generate a fairly versatile ecosystem around it, based mostly on local and national competences. Education and training aspects has been taken into account as well as nurturing (micro-) entrepreneurship within the industry.

Concerning the initial academic contributions of the paper (which is in progress and will be upgraded until the final deadline on the 15th of September), we may here briefly refer to the interesting relationship between the concepts of systemic innovation and sociotechnical transition. This will be scrutinized in the later version of this paper. We will also conduct a better analysis on the governance aspects of a systemic innovation based both on a literature study as well as our existing empirical data. It has become evident that a governance of such innovations, added with a developing country context, is indeed a challenge and not much, if at all, studied issue in innovation studies. And yet systemic innovations are called forth to tackle those wicked problems that are not hard to find in any developing country.

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(to be added)

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