Chapter 21
Facilitating Communication in Adaptive Planning Processes for Inclusive Innovation: Discussing an Integrative Approach

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Abstract In this chapter, it is argued that linear approaches have influenced innovation strategies for local development, having limitations for addressing long-standing socio-economic problems in unequal and exclusionary societies such as Peru. However, the facilitation of a broader communication perspective could contribute to configure more inclusive innovation processes for a number of reasons: it can contribute to understand the nature of inclusive innovation processes; it can serve to recognise entry points for inclusive innovation as well as to reorient innovation processes towards inclusivity. This discussion allows a rethinking of the current innovation strategies for local development and proposes a set of recommendations to enable communication with adaptive planning processes for a broad-based inclusive development strategy in the Peruvian context.

21.1 Introduction

The important contribution of innovation to economic growth, development and social welfare is recognised throughout the world. Over the past decade, the Peruvian government has been implementing a set of innovation policies, programs and proyects as part of a national strategy to address long-standing socio-economic problems (Ismodes 2006; Villaran 2010; OECD 2011; Bazán et al. 2014; Kuramoto 2014; European Commission 2014; Ismodes and Manrique 2016).

Innovation strategies for local development in Peru are mainly focused on the promotion of innovation through linear communication understandings that are mostly based on a technology transfer approach (see CONCYTEC 2016). Despite some positive advances in the identification, recognition and support of local technological innovations, these initiatives have limitations in addressing socio-economic problems

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such as unequal access to public services and the exclusion of rural communities and socially vulnerable groups[1] (Bazán et al. 2014).

Johnson and Andersen (2012) argue that more inclusive development strategies will generate more inclusive innovation processes, in which excluded groups may have the opportunity to shape their future by interacting with other relevant stakeholder groups (p. 10). Inclusive innovation is defined, then, as a process in which historically excluded groups may have the opportunity to participate in innovation processes oriented to their local development (IDRC 2011; Cozzens and Sutz 2014; Bazán et al. 2014; Dutrénit and Sutz 2014; Heeks et al. 2014; Joseph 2014; Schillo and Robinson 2017).

Broader strategies for inclusive innovation that question linear technological assumptions have contributed to the creation of new local networks, new forms knowledge and new technologies oriented to transform exclusionary societies (Fressoli et al. 2014; Smith et al. 2014). In this context, the facilitation of communication become central not only to disseminate innovations but also to create environments for configuring inclusive innovation processes (Alayza 2017).

While changes into unequal, complex and uncertain societies require broad-based socio and technical strategies (Geels 2004; De Melo 2014), adaptive planning processes may permit to design well-strategized communication interventions that can give some insights for configuring innovation for inclusive development.

This chapter presents a review of the conceptualisations of communication in innovation in order to discuss the role of communication for inclusive innovation. This allows proposing broad-based strategies, in which adaptive planning processes could instrumentalise communication in order to understand, recognise and reorient actions towards to this aims.

21.2 Interpretation of Innovation for Local Development

Innovation is defined as a process through which new products, services, processes, organisational methods and practices are used by people in a given context (BID 2010; World Bank 2010). Strategies for promoting innovation in Latin America and principally in Peru are mainly focused on a technology transfer approach (e.g. CONCYTEC 2016), having multiples limitations for reaching local development.[2]

Since its early use in the 1970s, technology transfer has been interpreted as the action of transmitting ideas, information, knowledge and technology between

[1]Excluded groups are defined as groups or subgroups that lives under an unequal distribution of a valued good or basic service such as health, food, water and/or energy. For example, people who live in isolated rural villages in Peru or people who live in peri-urban zones of Peru that are lacking a basic service, live with less than 3.5 American dollars and have an informal job could be considered as excluded.

[2]Local development is defined as the interactive process of expansion of capabilities and collective liberties in a territory for the reduction of disparities and the participative role of the excluded populations in their development (Sen 2000).

academia to the business and government sector (Rogers 2002). This logic has also been extended to diverse programs and projects promoted by governments and NGOs to support agricultural, food and water in order to improve local practices with the adoption of new technologies (Vanclay and Leach 2011; Coutts and Roberts 2011).

Technology transfer strategies have been influenced by the linear notion of innovation that mostly conceptualises innovation as a process of discovery associated with scientific inventions in isolated places such as laboratories, and assume that the benefits of transference of technologies would transform society as a whole (see Latour 1987). The ability of technology transfer as one of the main strategies to promote innovation for local development has been debated by several scholars, proposing more participative and constructive strategy that need to align and configure different socio and technical aspects for the generation, sustain and expansion of innovation in a territory (Smits and Kuhlmann 2004; Wieczorek et al. 2012; Thomas et al. 2012; Fressoli et al. 2013; Leeuwis and Aarts 2016; Harman 2018).

Broader notions of innovation sustain that innovation emerges from a systemic process generated by the multiple interactions of technological, social and institutional aspects (Smits 2002). In this systemic and co-evolutionary view, businesses, universities, governments and users participate in the creation of innovative process according to the demands and needs of a local and global marketplace (Freeman 1995; Lundvall 1992; Nelson 1993). This perspective also suggests that several components within innovation processes co-evolve, and in every interaction, there is an alignment of diverse processes in which social and technological changes are produced at almost the same time (Geels 2002, 2004).

Adopting a similar argument under a socio-technical framework, Thomas (2009) explains in a philosophical way that society is technologically configured as technologies are socially constructed (p. 15). Thus, innovation is not only ruled by economic, social or technological separate actions, but is configured by societal and technical components that influence each other through every interaction (Bijker et al. 1987).

The socio-technical perspective and the systemic and co-evolutionary notion of innovation have conceptual similarities, but most importantly, they challenge linear technological conceptions that motivate particularly technology transfer strategies for innovation; and propose a broader understanding of innovation in which the relationships and interactions (i.e., communication) are the pillars of innovation processes.

21.3 Interpretations of Communication in Innovation

Communication is highly relevant and influential in innovation studies (See Rogers 2003; Leeuwis 2004a, b; Zerfass and Huck 2007; Hülsmann and Pfeffermann 2011; Pfeffermann et al. 2013; Leeuwis and Aarts 2016; Pfeffermann and Gould 2017). In Peru, communication in innovation has been mostly interpreted as a process of transference in strategies that promote local development (See CONCYTEC 2016). Nevertheless, there are broader conceptualisations that give more coherent communi-

cation views for implementing broad-based strategies in order to support innovation effectively. Over time, the notion of communication has evolved during the last century to broader conceptualisations. Although there is not a comprehensive chronology in the literature showing how ideas of communication have been interpreted in innovation studies (Mattelart and Mattelart 2003), there are three interconnected views of communication that can help to understand how communication has been interpreted and implemented in innovation strategies for local development.

21.3.1 The One-Way Idea of Communication in Innovation

The one-way idea of communication is a linear understanding which is the most basic and instrumentalist conception of communication. It recognises that communication is produced by senders and receivers who exchange messages through several communicational channels, in which the "noise" or the "interference" may cause failure in the communication between individuals. This idea emphasises the message emitted by a sender, which can be seen as a linear understanding of communication (see Berlo 1960).

The linear understanding of communication has similar principles to the linear ideas of innovation. Thus, linear concepts of innovation interpret communication with a separation between the "scientific" and "real" world, in which communication may connect those separate spheres (see Latour 1987). From this perspective, communication is seen as the intermediary between science and society, or as the intermediary between the "the natural world" (i.e., laboratories or scientific spheres) and the "social world" (i.e., the society). Here, existing information is transferred from one side to the other, principally from scientists to the population (Latour 1987). In other words, it is assumed that existing messages (e.g. technologies) are created in a natural world (separate from society) and their mere transference may generate an impact in the social world.

For example, in rural communities of Peru, one of the long-held assumptions in the implementation of innovation strategies is that there are individuals who know or possess knowledge (i.e., scientists, experts or scholars) and there are other individuals who do not possess such knowledge and must need to acquire that knowledge (i.e., the rural population). Thus, this notion emphasises the transmission from the individuals who are considered that "know" and relegate the individuals who are the receivers, which are considered "vulgar" (which constitutes the origins of the word "divulgation") or lacking skills or knowledge (Alfaro 2006).

Experiences of technology transfer processes in Latin America and Peru oriented to local development show that the dissemination of pre-conceived ideas and technologies has not achieved the desired results concerning local development (see Box 1). These strategies have been promoting with a little engagement of the users, generating in most of the cases some contradictory effects (Escobal et al. 2012; Herrera 2011; Fressoli et al. 2013; Harman 2018). Such processes have mostly been unsuccessful because they did not promote any room for negotiation (Fressoli et al.

2013). Furthermore, most of them have failed because they have replicated linear and top-down orientations, in where the potential beneficiaries are considered passive actors (Harman 2018).

The linear interpretation of communication in the field of innovation in Latin America has centred on spreading technologies, knowledge or information rather than on creating interactions between diverse groups to facilitate or improve social practices. This reduces communication in the transmission process where the possibility of a modification in the message is not recognised, and therefore, not integrated into the process; reducing the important interactions that are beneficial for the generation and expansion of local innovation processes (Alayza 2017).

Box 1: ***The Technology Transfer Fair for Development: The Experience of an Innovation Policy Instrument in Peru***

Local fairs are cultural, economic and social events that promote the traditional values and customs of the regions, cities, towns or villages. In Peru, it is a widespread practice for fairs to be organised in the productive, livestock and agricultural sectors.

Placing the local fair custom in the framework of national innovation policies, local authorities the academia, and the local business sector organised the Technology Transfer Fair for Development (TTFD) as a policy instrument that seeks to create environments and incentives to identify, recognise and support local technological innovations that address socio-economic problems at the regional level.

In Cusco,[3] Peru, since 2008, the TTFD supported more than 330 potential innovations from medium and low-income communities and villages through promotion and display at the fair, and more than 90 local innovators were given monetary and technical assistance in the areas of agribusiness, metalworking and handicrafts. In addition, during the last decade, the TTFD has attracted high levels of attendance from the local population, with attendances of more than 10,000 people, and received significant media coverage at local, regional and national levels. The pedal-operated fodder shredder and the brick production fan are interesting initiatives identified and supported by the TTFD with technical and instrumental business plans that reached unexpected and some contradictory results (see Boxes 2 and 3).

[3]Cusco is a region in the southeastern Sierra of Peru located at 3300–4500 m above sea level. It has a population of roughly 1.2 million inhabitants. Cusco has a millenary tradition, having an impressive cultural heritage that came from the Inca culture. However, it is one of the poorest regions in Peru with more than 60% of people living in poverty. Also, more than 80% of the local population is involved in informal activities with very low economic productivity, with a monthly average income of approximately US$85 per capita (INEI 2015).

The complexity of each proposal supported by the TTFD, which implied the participation of heterogeneous actors, high uncertainty to extend those initiatives and the turbulent and unequal context in where they run, were not sufficiently backing and articulated by the actors that organised the TTFD. In fact, it can be affirmed that the influence of the TTFD ideas of technology transfer has generated some effects that can be seen as contradictory effects to their participants.

Taking into consideration that the majority of proposals supported by the TTFD belonged to or were oriented towards low and middle-income groups, the technology transfer approach—an integral part of the name, brand and actions of the TTFD—presented many drawbacks to recognise and strengthen important aspects that can configure inclusive innovation processes.

While new local networks of heterogeneous actors have been built as a consequence of the TTFD, strategies were focused on support only specific problems, mostly technical, rather than on creating spaces for sharing knowledge, strengthen local capabilities, and open new opportunities that could allow to create and extend inclusive innovation processes according to the local need in the region.

*This case illustration is based on Alayza (2017).

21.3.2 The Persuasive Ideas of Communication in Innovation

A better understanding of the linear ideas of communication has led to more persuasive interpretations. The subjective model interprets communication as the relationship between senders and receivers, in which alternative interpretations, previous knowledge, and experiences are part of the process of communication (Dervin 1983). This improved understanding of communication has generated more emphasis on comprehending how the receiver creates messages in order to develop tactics and strategies that promote behavioural changes and the adoption of new practices (Mattelart and Mattelart 2003; Leeuwis 2004a, b; Alfaro 2006).

This persuasive concept of communication has oriented communication actions to generate stimuli, responses and meanings through communicational intervention, media channels and campaigns. This concept of communication assumes that the quality of the stimulus and message will determine the success of the communication (Leeuwis 2004a). Although these ideas of communication have adopted demographic and sociological concepts to understand human relationships, there is always an emphasis on persuasion for disseminating ideas, practices and technologies to change behaviour (Beltran 2005).

In the field of innovation studies, the subjective model of communication has been operationalised in the diffusion of innovation theory. This theory orients the actions of communication to the adoption of technologies, practices and knowledge. Rogers (1962, 2003) proposed the diffusion of innovation theory to promote the adoption of products in the agricultural sector, and these ideas have been extended to diverse spheres of the development world (i.e., development projects, programs and movements). From that perspective, the practice of communication has been oriented as the way to disseminate products and also as the way to convince and persuade potential users to adopt a product or technology.

The diffusion of innovation theory has been reviewed and improved since its creation in the 1960s. New concepts such as social networks, decision-making mechanisms and relationships with the environment have been added to discuss communication more broadly. Despite changes and contributions in the field, one of the main weaknesses of this conception is that it continues to assume that innovations (i.e., ideas, knowledge, messages and technologies) have in themselves a positive association for the adopters, and does not deal with issues such as the way power is exercised behind innovation processes that may be negative for deprived and poor groups (Mattelart and Mattelart 2003).

This practice of communication is a significant evolution in comparison to the linear model of communication. However, it has limited effects because efforts have been focused mainly on singular changes through diffusion (e.g., the introduction of a new technology or practice) rather than a constructive and collective way for change that must have more relevance deal with unequal societies.

Box 2: ***Why Technology Transfer Approach Influenced the Not Expansion of the Pedal-Operated Fodder Shredder into Other Peruvian Villages?***

The majority of people who live in rural villages in Peru are small farmers dedicated to agriculture and livestock-raising. Both practices are complementary because the residues of the crop production, with suitable treatment and cutting, can serve to feed the local cattle (including cows, sheep and llamas). This generates better production and, in turn, better incomes. However, small farmers waste around 40% of fodder material because of inefficient practices, reducing the possibility of obtaining better prices for selling their livestock.

Understanding this problem, a professor at a local university (i.e. the innovator) worked with a group of small farmers to create technology in the form of a pedal-operated fodder shredder with the aim to reduce the amount of waste. The machine cuts fodder material into usable pieces without wasting too much material. This technology operates using human energy, and it is adaptable to farmers' conditions at an altitude of over 3900 m above sea level. In comparison with similar products, the fodder shredder has several features that suit the local conditions. It is portable (it has wheels), it operates with mechanical energy (it has pedals to generate energy), it is relatively cheap (it costs

roughly five times less than conventional machines), it is easy to repair, and the materials to make it can be sourced locally.

The adaptation of this new technology in combination with social and technical aspects in some rural villages generated an inclusive innovation process for the following three reasons. First, it was created as a new technology oriented to meet a local necessity of small farmers who live under the poverty line (i.e., people who earn approximately US$3.50 per day). Second, the process involved the generation of a new network (comprising the innovator, the university, small farmers, local authorities and municipalities) which enabled the participation of different actors in diverse stages in the innovation process such as the R&D process, the implementation and use, and the expansion of new practices and technologies. Third, the new institutional arrangements and new actions facilitated an improvement in the management of livestock-raising, creating new opportunities.

Due to the success of the process, the demand for the fodder shredder increased considerably in surrounding villages. This led to the participation of the innovator in the TTFD to scaling up their innovation. As a strategy for expansion, the TTFD encouraged the innovator to conduct a technology transfer process to a local enterprise. After this process, the expansion of the inclusive innovation process was interrupted, and later on, this initiative stopped.

Based on the situation described for the fodder shredder, two aspects can be highlighted for the thwarted expansion of the technology's inclusive innovation processes to other villages. First, the strategy of generating relationships and agreements changed in favour of a technical strategy fostered by the TTFD. The previous interactive R&D process adopted by the innovator not only contributed to the creation of new technology, but it also allowed the innovator to gain an in-depth understanding of local practices and needs and thereby to develop a better strategy for adapting and expanding the technology. The strategy was based on the mobilisation of diverse actors who were related to the problem, not only generating interest in the technology but also establishing relationships with the actors involved. Relationships were forged based on respect for local traditions, creating the foundation for an interactive social learning process between the innovator and the potential users.

The local enterprise that later took responsibility for producing the technology did not replicate those actions. It used some communicational tools to show the advantages of the technology, but its main emphasis was on disseminating the product rather than mobilising diverse actors to create new opportunities for local farmers. Second, the technology transfer process to pass the technical information to the local enterprise was not adequate. The technology transfer actions undertaken by the innovator did not convey all the complexity that would be involved in facilitating and extending the inclusive innovation processes.

The technology transfer from the innovator to the local enterprise was limited to the technical aspects, taking for granted the other actions that were vital for the adaptation of the technology in rural villages. Yet the passage of time proved the strategies of the local enterprise to be limited considering the expectations of the rural farmers and in comparison with the previous example set by the innovator in forming relationships with other actors.

The case of the fodder shredder suggests that, rather than facilitating an inclusive innovation process, the technology transfer strategy promoted by the TTFD undermined the expansion of this inclusive innovation process. By comparison, a people-centred, inclusive technology adaptation and application approach would have been adequate to forge a local strategy in the rural communities that had a need for the innovation.

**This case illustration is based on* Alayza (2017).

21.3.3 The Construction Notion of Communication in Innovation

A broader interpretation of communication is the social construction model, which proposes that communication must be understood in the context of the interrelationships of the protagonists that requires time and involves a constant process of renegotiation (Hajer and Laws 2006). This concept of communication has its roots in a constructivist understanding in which the protagonists of communication construct meaning in their multiple interactions (Te Molder and Potter 2005).

This idea of communication takes into consideration the multiple interpretations of relationships that allow individuals to generate dialogue focusing on shared experiences, facilitating new ways of understanding themselves, other people and their reality (Leeuwis and Aarts 2011). This permits to interpret communication as the form to create new discourses and actions towards a social, political, cultural and humanistic change (Alfaro 2006; Dutta 2012).

Understanding that innovation implies change in the status quo that occurs by the constant co-evolution of technological and societal aspects in relation to each other in a territory (Smits 2002), communication is central to configuring innovation because it can facilitate the alignment of discourses and actions for the construction of new agreements, networks, and capabilities that enables innovation (Leeuwis and Aarts 2011, 2016).

While there is a lack of opportunities to deal with local structural problems-mostly for excluded groups in Latin America and Peru- the facilitation of communication can open new opportunities, in which multiple actors can participate in the configuration of more inclusive innovation processes for local development.

21.4 Communication for Inclusive Innovation

The debate about how to generate innovation that allows new opportunities in unequal structures challenge traditional frameworks by proposing more participative and broader concepts create broad-based inclusive strategies. Reflecting on the Latin American context, barriers exist that prevent local needs being met through fair redistribution and lack of opportunities. This situation limits citizens' access to essential services and infrastructure and reduces their ability to fully exercise their rights (Dutrénit and Sutz 2014).

Innovation could be understood as inclusive because of a number of intercorrelated factors. First, new technologies, ideas, processes, goods and/or services focus on overcoming local problems of deprived and excluded groups. The nature of these processes encourages the participation of excluded groups in the different stages of the innovation process (Fressoli et al. 2014; Smith et al. 2014); generating social learning processes and new opportunities for negotiate change (Dutrénit and Sutz 2014; Papaioannou 2014). Then, the combination of these factors encourages the further generation of new opportunities for social and technical transformation, especially within excluded groups (Johnson and Andersen 2012; Foster and Heeks 2013; Chataway et al. 2014; Dutrénit and Sutz 2014).

In this regards, communication can enable more inclusive innovation processes due to multiple actor interactions that allow the alignment of discourses and actions towards their local development (Alayza 2017). Thus, communication as a strategy that seeks inclusive innovation can provide a deeper understanding of how stakeholders frame problems, make negotiations, take decisions, construct networks, shape behaviours, exercise power and generate processes of inclusion and exclusion (Thomas et al. 2012; Heeks et al. 2014; Leeuwis and Aarts 2016; Schillo and Robinson 2017).

Inclusive innovation for local development can be forged with planning processes motivating the engagements of actors to reconfigure a better future (Andersen and Andersen 2014, 2017). Nevertheless, change generated by innovation is not rigid; therefore, change cannot be simply and linear planned (Leeuwis and Aarts 2011). This is why it is pertinent to discuss adaptive approaches that enable more participative planning processes to configure inclusive innovation for local development.

21.5 Adaptive Planning Approach

Adaptive planning is focused on generating flexible plans that allow reconstructing models of reality for a suitable and realistic social and technical change. From a constructivist perspective, adaptive planning is oriented on re-building a better future, which is possible when multiple reconfigurations and readjustments occur at the social and the technical level, involving the participation of various parties that dialogue, negotiate and complement diverse perspectives based on their models of reality.

The work of Emery and Trist (1973), Trist (1976a, b, c), Ackoff (1974) and Ozbekhan (1973) in the early 70s, contributed to shifting ideas of rigid planning processes from seeing a more participative and adaptive perspective that implies changes at a social and technical level.

The philosophy of adaptive planning partly on the assumption that changes need to deal with elements such as uncertainty, complex problems, and the participation of distinct protagonist (Emery and Trist 1965; González 1997; Burns et al. 1983; De Melo 2014).

In adaptive planning processes, the active participation of multiple actors can facilitate the constant evaluation and reorientation of actions to achieve changes at organisational and inter-organisational level (De Melo 1985). Nevertheless, progressive's processes for re-evaluation, decision-making, learning made by the actors' interactions in the planning process are even more relevant than reaching specific goals because it can lay the foundations for a suitable and consistent change (Babüroglu and Ravn 1992).

Thus, adapting planning processes can be understood as a continuous social learning, characterised by flexibility, dynamic adaptation, and by the constant evaluation of the carried out actions, which allows making more compatible with the interactions between different actors that seeking innovation (De Melo 2014).

In this regards, when multiple actors work together on resolving complex problems or undertaking innovative initiatives for social change, non-synoptic (i.e. that does not follow a schematic and rigid course) and adaptive planning processes may motivate to accommodate agreements between different kind of actors in order to configure innovation according to local capabilities and opportunities in a territory (González and De Melo 2004).

While adapting planning actions require the active participation of the protagonist of change, communication for inclusive innovation may give some insights in order to open new possibilities for change in unequal structures, contributing to understanding the roots of the problems for innovation, identifying key players for configuring innovation and opening spaces for dialogue in order to reorient actions toward a desirable social and technical transformation.

Box 3*: How the Interruption of an Adaptive Planning Process Stopped the Expansion of the Brick-Making Business?*

The artisanal manufacture of bricks constitutes a significant problem in Cusco, Peru because it generates high levels of contamination in the environment and is detrimental to human health. The artisanal brick-making business is an informal activity in Peru because it is not covered by government regulations. The majority of people involved in the small-scale brick-making business in Cusco are low-income families, and even entire villages, who live in precarious conditions in peri-urban zones in the region.

Artisanal bricks are produced outdoors using traditional ovens that burn the clay in order to create small units of building material for local commercial-

isation. The brick-making production generates high contamination from the materials used as fuel including wood, plastics, rubber tires, textiles and even rubbish. The high emission of carbon monoxide affects surrounding villages and the brick manufacturers themselves. The methods and technologies used, combined with the high altitude of Cusco, make it difficult for the ovens to reach sufficient temperatures to produce bricks. This situation obliges brick manufacturers to use a significant amount of material to generate energy. It also requires them to be exposed for long hours to noxious smoke, damaging their health considerably.

Understanding this problem, a local innovator, with the support of a research centre from a local university, an international NGO and the active participation of a brick producers' village, created a ventilation system to improve the combustion in the artisanal ovens for more efficient brick production. The use of the fan for artisanal brick production improves the energy efficiency, accelerating the time required to reach the optimal temperatures to fire clay, reducing the working time for the brick manufacturers, and most importantly, reducing the emission of carbon monoxide by 70%. In comparison with other similar products, the fan technology can operate at high altitudes (over 3500 m above sea level) and under low temperatures, making it suitable for Cusco conditions.

The constant interrelations between the actors through adaptive planning processes that were agreed according to each interest, expectation and resources permitted to configure an inclusive innovation process, in which a new technology in combination with societal (social, economic, institutional and political aspects) was adapted to the context of small villages in Cusco. This was possible because it was built a new brick production network comprise by different groups such as the innovator, a local university, village's brick producers, and local authorities. This brick production network was undertaken adaptive actions that facilitated the participation of various actors in different stages of the innovation process such as the R&D process, the implementation, the dissemination, the generation of new local business and the creation of other complementary actions such as roundtables and open events for dialogue. Finally, it was implemented new policies, new institutional arrangements and new methods to fire the clay led to cleaner and more efficient brick-making production in some poor villages.

After the expansion of the inclusive innovation process in some villages in Cusco, the innovator participated in the TTFD and received an award. As part of the award, the organisers of the TTFD brought in some technology-based companies from overseas to participate in the technology transfer process for some local innovations including the brick production fan. The involvement of the overseas companies served to train the local innovator; on the other hand, it encouraged these companies to bring their technological offerings into the Cusco market, undermining the future expansion of the inclusive innovation

process for the brick production fan into other villages with similar characteristics.

Analysis of this case indicates two main reasons why the inclusive innovation process for the brick production fan was not expanded. First, commercial perceptions prevailed over a participative and adaptive process that has undermined the extension of inclusive innovation processes. The commercial opportunities taken up by foreign enterprises undermined the mobilisation of new actors regarding this local problem. This meant that the previous adaptive planning actions of building networks with excluded brick producers and other relevant actors were replaced for individual actions. Although more technologies were inserted into the local market, which could be seen as a positive in terms of improving the technological offerings in the region, this stopped diverse actions that were configured as an inclusive innovation process in local villages such as dialogue roundtables, new training processes and new policy regulations. This also reduced the opportunities to replicate adaptive planning actions oriented to improve brick production in other small-scale brick producer villages. Second, the authorities did not realise all the implications of supporting local inclusive innovation processes. While their intention was to improve the local brick production through the transfer of technologies from a foreign enterprise to local innovators, they did not see that this may backfire and create unfair competition for local innovators. In this regard, the lack of protection mechanisms makes local innovators vulnerable to powerful competitors.

In light of this example, it can be suggested that actions promoted by the TTFD focusing on transfer technology approach under a commercial view undermined previous adaptive plans that were configured an inclusive innovation process in brick producer villages in Cusco, Peru.

**This case illustration is based on* Alayza (2017).

21.6 Facilitating Communication in Adaptive Planning Processes for Inclusive Innovation

Adaptive planning processes can generate innovation oriented towards local development (De Melo 2014). The current socio-economic and the lack of opportunities caused by unequal structures in Latin America and Peru, challenging to find new ways to support and promote inclusive innovation processes for local development. This situation allows discussing an integrative approach that encompasses communication in adaptive planning processes that can help to understand the nature of innovation, recognise entry point for innovation and re-orient actions towards inclusivity (see Table 21.1).

Table 21.1 Integrative approach

	Inclusive innovation	
	Communication	Adaptive planning
Approach	– Construct meaning in interaction	– Active adaptation for a coherent change
Orientation	– Allow understanding of themselves, other people and their reality	– Better futures based on the participation of their protagonist
Characteristics	– Interpretative – Complex – Contextual	– Adaptive – Flexible – Complex – Uncertainty
Functions	– Dialogue – Construct network – Social learning – Negotiation – Diffusion	– Involvement of their protagonist – Social learning – Constant re-evaluation of objectives – Redefinition of paths
Integrative approach	– Understand the nature of inclusive innovation processes – Recognise entry points for inclusive innovation – Reorient innovation processes towards inclusivity	

21.6.1 Communication in Adaptive Planning for Understanding the Nature of Inclusive Innovation

Taking into consideration the nature of innovation which has high levels of complexity and uncertainty (Smits 2002; Smits and Kuhlmann 2004), adaptive planning processes can help to motivate the inclusion of actors in the solution of complex problems in the society (De Melo 2003), in which this active involvement could be crucial for dispelling uncertainty in innovation processes (Powell and Grodal 2009).

In this regards, the role of communication is central because it can enable a better comprehension of the nature of local innovation processes due to it can open spaces for dialogue around a real problem (Dutta 2012). For example, events such as local fairs (see Box 1) that concentrate diverse actors can be conceptualised as a communication space not only for promoting the diffusion of ready-made technologies but also for fostering communication for inclusive innovation, in which various actors with different roles, responsibilities, aims, necessities, capabilities and opportunities may find room to manoeuvre to shape viable options for change in their territory.

Furthermore, given that adaptive planning is considered as a continuous process of social learning (De Melo 2014), promote this kind of spaces for dialogue could contribute to building interactive learning spaces (Lundvall et al. 2009; Johnson and Andersen 2012) that allow generating innovation according to different needs. Thus, rather than the instrumentalist forms of disseminating new ideas or technologies such as communication is commonly understood in innovation, adaptive planning processes can help to facilitate communication oriented to comprehend what kind

of new technologies or solutions could be adapted according to social, cultural and economic backgrounds. This may allow avoiding strategies that are regarded as appropriate in advance for building, in a participative way, strategies that embrace diverse technological, social and institutional aspects, permitting to shape strategies in a more effective and participative ways towards more inclusive development.

21.6.2 Communication in Adaptive Planning for Recognising Entry Points for Inclusive Innovation

Adaptive planning proposes the introduction of incremental changes with real implications in society, in which actors are gradually articulate with others, and in this articulation, it can be recognised multiple options for innovation (Almeida and De Melo 2017).

Given that the current strategies to promote innovation in Peru present various constraints, dialogical communication may help to identify, recognise and support local inclusive innovation processes taking into consideration local capabilities, resources and opportunities. For example, the formation of local networks that have that enabled dialogical communication to strengthen local capabilities in excluded groups, opening new opportunities for innovation through more participative decision-making and knowledge-sharing processes (See Boxes 2 and 3).

Thus, an alternative for integrating excluded groups is promoting the formation of new networks focused on resolving local problems with the participation of different kind of actors. This can influence the generation of social and political decision-making concerning what kind of innovation process should be undertaken or supported according to the local reality (Thomas 2012). Building new networks according to current problems may permit orienting actions towards some specific goals in terms of seeking innovation for inclusive development, but, even in cases innovations fail, the ties and learning processes generated can contribute to the configuration of other innovation processes (Lundvall et al. 2009; Borrás 2011; Wieczorek et al. 2012; Arocena and Sutz 2014).

21.6.3 Communication in Adaptive Planning for Reorienting Innovation Processes Towards Inclusivity

Considering that local innovation strategies in Peru have limitations regarding enhanced social inclusion, it seems to be necessary to design flexible planning processes in which multiple actors that can orient actions towards more inclusive innovation processes.

González (1997) states that participation in collaborative arrangements made by adaptive planning actions motivates active process of innovation. These arrangements

permit to built networks not only for sharing knowledge but also for increasing the efficiency in processes for change (De Melo 2014). In this context, promoting communication may help to find entry points for identifying and give voice several kinds of actors (Dutta 2012), which can influence the generation of social and political decision-making concerning the direction of innovation processes. This is why that, strategic and inclusive local networks should be oriented to enable new agreements and new forms of organisation that open possibilities for creating new lines of production according to local characteristics (Thomas et al. 2012). For example according to the cases illustrated in the Boxes 2 and 3, the formation of strategic networks around innovations oriented to resolve local needs, not only contributed to improving the quality of life of excluded groups but also created new lines of production in the processes of design, construction and expansion of local innovations. However, unequal power relations embedded in technology transference strategies undermined the extension of those inclusive innovation processes.

In this regards, power relations have to be taken into consideration in innovation processes, especially when these processes are oriented towards supporting excluded groups. Power is the foundation of the different ways of organisations in societies, in which different forms of communication constitute critical sources of power and counter-power for social transformations (Castells 2010). Since ways of thinking can be turned into ways of doing, communication may constitute the way of creating coordination among diverse actors and encourage the generation of changes through the formation of counter-power networks in societies (Castells 2011).

Inclusive innovation is not a mainstream discourse, and this is why counter-power networks should have an "explicitly normative agenda, which seeks to mobilise distinctly political processes, such as claims to social justice, and often questions organisational and economic assumptions in conventional innovation policies" (Fressoli et al. 2012, p. 2).

Thus, adaptive planning processes must be oriented to create a new agenda with the participation of multiple networks that can support different stages of innovation processes, strengthening local capabilities and opening new opportunities for accommodating a broad base inclusive development strategy.

21.7 Conclusion and Recommendations

Discussing on the literature about communication, inclusive innovation and adapting planning processes in the Peruvian context, it can be affirmed that there are conceptual relations between those concepts as well as there is relevance for using together to accommodate a broad-based inclusive strategy for dealing with exclusionary structures. In this scenario, the role of communication under a social construction conception is crucial because it can permit to adapt actor's views towards more doable and coherent innovation processes in diverse contexts.

While adapting planning processes can help to construct multiple options for change, communication can be instrumentalised for helping to understand the nature

of inclusive innovation processes, recognising entry point for innovation and re-orienting actions towards inclusive innovation for local development.

This also opens new possible roles and contributions for communication specialists, who can act as cross-linker between diverse actors and networks for facilitating an adaptive social and technical change. Such communication specialists can be vitally instrumental in the conceptualisation, facilitation and expansion of inclusive innovation processes.

Regarding the roles of communication specialists, the following are some recommendations that must be considered in order to facilitate adaptive planning processes for configuring inclusive innovation:

Enable communication as the creation of meaning in the multiple interactions of the involved actors. This can help to promote the creation of dialogue rather than just the dissemination of preconceived ideas or technologies, enabling more creative, coordinated and relevant actions according to every context. Communication can be operationalised by creating roundtables, agendas, events to discuss how to create implement, extended, monitoring and/or evaluate innovation processes in priority areas such as health, food, water and/or energy.

Build new networks towards inclusive innovation. Communication facilitates integrative actions in order to interconnect multiple actors' interactions. In this regards, communication specialist can motivate the engagement of local organisation such as universities, government agencies, and innovative enterprises to find feasible solutions and to resolve some bottlenecks that can appear in the trajectory of the inclusive innovation process at different levels and due to various aspects, mostly related to human relations.

Orchestrate adaptive planning processes in order to create innovation processes towards inclusivity. Communicational efforts can strengthen the networks relations with a view to sustaining them and permitting to plan new initiatives that are seeking inclusive innovation. In that sense, a communication specialist can facilitate that relevant actors and networks can work together in flexible action plans helping to discover entry points for making inter-stakeholder agreements, strengthening local networks, systematising and monitoring learning processes and visualising relevant achievements of those interactions.

Promoting an inclusive and participative approach. Through adaptive planning processes, it can find strategic ways to include excluded groups, not only with conventional technology transference or market strategies but also with creative and collaborative mechanisms that could be oriented to improve local capabilities and generate new opportunities at different levels. Collective actions based on resolving local needs can make innovative solutions but also can create new lines of production related to the topic areas (e.g. health, food, water, energy) that may give a broader, inclusive and sustainable socio and technical change.

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