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Shaping changes through participatory processes: Local development and renewable energy in rural habitats



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ABSTRACT

The socio-technical adequacy processes of technologies, in general, and particularly, renewable energy, require paradigm changes in the way of thinking and acting in the territory. These processes are key, on post, to achieve greater equality, democratic management, quality of life and environmental sustainability, particularly in the rural areas of Northwest Argentina. The article is based on the premise that these changes are socially constructed.

A set of workshops were conducted on purpose to discuss and reach a consensus on conceptual, methodological and practical aspects, associated with the processes of 'technology transfer' and rural development. Participation in the workshops focused on technical stakeholders (researchers, technicians and extension workers), identified as links between new technology and the users thereof. From these shared spaces, the conceptual model of socio-technical adequacy was validated and multiple determinants for the processes were identified and prioritized. Finally, consensual action oriented proposals in the following levels: personal-institutional, inter-institutional and public policy.

This article concludes that the areas of interaction and collective construction are necessary and feasible for implementation. These areas represent real opportunities to increase equity and improve interventions in rural habitats.

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1. Introduction

The search for comprehensive solutions to social and environmental problems requires a shift in the way of thinking, and focusing on the interventions on different groups of stakeholders involved in local development processes. The management in the territory change [1,2] requires the development of interest, the strengthening of strategic alliances, the formation of local capacities, the legitimization of the decisions made, the flexibility and the continuity of the processes [3,4]. In this way, the construction of new models for a territorial approach demands specific times and space for reflection, discussion and consensus building [5,6].

The socio-technical adequacy processes of technologies in general, and renewable energy, in particular [7–9], do not escape from this need. This results key if the evaluation of the projects and actions are part of systemic judgment criteria, such as relevance, efficiency, effectiveness, appropriation, sustainability and long-term impact [10,11]. Lineal and scientific focus (in the traditional and ‘behavioral’ sense of the word [12] can result insufficient to address the complexity of the sceneries and processes that characterize the socio-technical interactions. The acceptance of the term ‘socio-technical adequacy’ in detriment to the traditional concept of ‘technology transfer’, implies the inclusion of different stakeholders and perspectives (users, technicians, investigators, government officials, non-government organizations, etc.) in the processes of production and social construction of the utility and performance of the technologies [8].

Particularly, in the rural areas of Northeast Argentina, these processes are critical in post of ‘achieving a more integrated, balanced, better equipped and sustainable territory...’ where each inhabitant and their community has achieved: a territorial and cultural identity, economic progress, environmental sustainability, democratic management and quality of life [13,14].

In these processes of change, renewable energies are identified to have a high potential for the improvement of living conditions, environmental quality and the socio-productive developments in the rural areas [15,4]. Through the use of renewable energies resources it is possible to encourage the emergence of local innovation dynamics, generate new local development opportunities, promote new productive activities and articulate new forms organization of production [16]. As well as this, renewable energy is identified as an opportunity to generate environmental benefits [17,18], to solve economic inequalities faced by rural areas [19–21] and a key component in energy planning processes at different scales [22,23].

However, technological interventions are not always ‘successful’ and comply with the scope and expected results [7,9]. Various limitations and technological, technological, economical, financial, institutional, social, cultural, and political barriers hinder the effective dissemination and implementation of renewable energy [24–29].

Improving the renewable energy socio-technical adequacy constitutes a significant challenge to create change at local and regional levels, transferable (in an experience and learning sense) to other technologies of interest, for social inclusion and improvement of rural habitats. On the other hand, renewable energy socio-technical adequacy processes are not isolated from the context and require to be analyzed in a systemic manner in order to overcome representations and point solutions in the territory [30–32].

In this line of systemic thinking, Ostrom [33] claims that the political environment and the management of natural resources – including the renewable energies – are crucially conditioned by the perspective of the stakeholders linked to the system, in terms of problems identification and decision-making.

Among the key stakeholders inherent to these processes at the local level, two groups can be highlighted: a) the so-called ‘beneficiaries or recipients’ of technologies, and b) professionals and technicians that, from various academic-scientific institutions, development agencies, government agencies and non-government organizations, act as intermediaries or connectors between possible technological solutions and their end users. However, the system is much more complex. Other stakeholders and multiple relationships are established among the artifacts, processes and organizations that define each technology [8]. However, the possibility of direct interaction with groups of researchers and extension agents who work in the development and application of technologies in the territory is taken as a starting point for this research. In this line, the article is oriented primarily to present the advances in the construction of knowledge and actions performed from dialogue processes with the second group of actors.

Also, the article is based on the premise that change is constructed. And, it is socially constructed [34]. In this sense, reflections and agreements generated from a set of social interaction places, which addressed both conceptual issues and practices to improve the social-technical adequacy of renewable energies and social technologies, in general, are presented.

Methodologically, the article fits into the so-called qualitative and socio-critical approaches, in which the understanding and deepening of relations and significant situations are prioritized, before the prediction and generalization of concepts [35–37]. The socio-critical paradigm also implies a constant interaction between research and action [38]. This suggests that research is built on participatory action, but at the same time, that research action generates a change [12], it modifies the initial reality. Therefore, the act of researching is not neutral. Changes are not considered externally from research, but on the contrary expected results, are intentional. This is based on the belief that participation, in itself, reflection processes, criticism, self-criticism, agreements, proposals and commitments cause a real change in people and, through these, in the institutions, the actions carried out and the environments where they occur. However, these changes are more linked to internal processes than certainties, observable conditions or directly measurable and short term. Hence, the connotation of continuity and permanence on the word ‘shaping’ in the article’s title, on relation to something that is happening but, it has not still finished nor closed.

2. Research framework

2.1. The need to redefine the ‘technology transfer’ concept

‘All technologies play a central role in the processes of social change. They limit positions and behaviors of the stakeholders; condition social distribution structures, production costs, access to goods and services; generate social and environmental problems; facilitate or hinder its resolution. Technologies are not merely

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