



The role of cooperatives in overcoming the barriers to adoption of renewable energy



Eric Viardot*

Professor Corporate Strategy, EADA, C/Aragó 204, 0811 Barcelona, Spain

HIGHLIGHTS

- We examine the barriers to adoption of renewable energy by RE cooperatives.
- We have identified the main significant barriers to adoption of RE by consumers.
- Cooperatives apply community-based marketing initiatives to ease the uptake of RE.
- We evaluate how each marketing initiatives diminish the barriers to adoption of RE.

ARTICLE INFO

Article history:

Received 27 June 2013

Accepted 8 August 2013

Available online 13 September 2013

Keywords:

Renewable energy

Cooperatives

Barriers to adoption

ABSTRACT

Recently, cooperatives have been created to promote the use of renewable energy (RE) most notably in Canada, the US, UK, Denmark or Germany. In order to develop the adoption of RE, the cooperatives have to seek to influence the behaviour of their members so that they switch from the use of traditional fossil energy to RE.

This paper examines the various barriers to adoption of RE and the way cooperatives are circumventing those obstacles in order to develop the use of RE. This study surveyed a sample of 9 cooperatives from countries where governments are subsidizing the use of RE. The paper identifies a set of specific barriers to the adoption of RE by consumers. It also reveals that cooperatives effectively contribute to the uptake of RE with community-based social marketing initiatives that are lowering those barriers successfully. Those initiatives are related to educational communication, low prices, local offers with complementary services, and cooperative distribution. The paper put forwards a framework for the assessment of how each of those initiatives contributes to the diminishing of each of the barriers to adoption of RE.

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1. Introduction

In contrast with the traditional fossil energy, Renewable energy (RE) comes from naturally replenished resources such as sunlight, wind, tides, rain, and geothermal heat. With the increasing pollution of the biosphere because of the burning of fossil fuels and the cutting of forests, the development of RE has become a major societal challenge: more than 191 countries have signed and ratified the Kyoto protocol about the stabilization of greenhouse gas concentrations in the atmosphere. This trend has been accelerated recently by the decreasing appeal of nuclear energy following the explosion of a nuclear reactor in Fukushima, Japan in March 2011 and the official announcement, in May 2011, by the German government of the plans to close all its nuclear reactors by 2022.

Besides the traditional biomass and hydroelectricity which represented about 13% of global final energy consumption, new RE – mostly wind, solar, geothermal, small hydro, and biofuels – accounted for 2.8% in 2009 (REN 21, 2011). Though RE technology is improving fast, the general public has been slow to adopt it. Some governments have introduced pricing programmes to allow customers who wish to buy green power the opportunity to do so for a marginal fee. Various governments have also introduced regulatory programs – usually known as Renewable Portfolio Standard (RPS) – to force electricity supply companies to increase their production of electricity from RE sources.

These programmes had shown some success, as RPS effectively encourage consumer-owned distributed generation (Carley, 2009), though not enough to have a substantial impact on the market (Hain et al., 2005). The public's perception of these programmes is that they were of a token nature and are being used to green the image of utilities, rather than support a young industry (Rowlands et al., 2002). In the meantime some traditional rural utilities have been quite reluctant to adapt to the new regulations (Tierney, 2011).

* Tel.: +34 934 520 844x272.

E-mail address: eviardot@eada.edu

In recent years, cooperatives have been created to promote the use of RE most notably in Canada, the US, UK, Denmark or Germany. Cooperatives are autonomous associations of people who join voluntarily to meet their common economic, social, and cultural needs and aspirations through jointly owned and democratically controlled businesses. Cooperative businesses carry with them underlying social values and ethical principles. Cooperatives around the world generally operate according to the same seven core principles and values, adopted by the International Co-operative Alliance (ICA, 1995). Those principles are: voluntary and open membership; democratic member control, economic participation by members; autonomy and independence; education, training and information; cooperation among cooperatives; and concern for community.

There are various types of cooperatives depending if they are owned and managed by the people who use its services (*consumer cooperative*) or by the people who work there (*worker cooperative*) or by the people who live there (*housing cooperative*); there are also some hybrid forms of cooperatives such as worker cooperatives that are also consumer cooperatives or credit unions.

Cooperatives are different from other forms of business enterprises because of some specific characteristics. First, there are no outside investors: they are owned by their members while conventional corporate entities are owned by investors and while nonprofit organizations are generally not owned by a person or a member (ICA, 2007).

The main goal of the cooperatives is to deliver goods or services for its members. Thus, cooperatives are not charitable by nature, unlike nonprofit organizations; nor are their goal to distribute profits based on level of investment, unlike investor-owned businesses (Davis, 1993).

Regarding control, cooperatives are also different from nonprofit organizations and investor-owned corporations (ICA, 2007). Cooperatives are democratically controlled, with all members having an equal voice regardless of their equity share and the board of directors is made up of elected co-op members who are involved in the day-to-day business operations and receives services for their contribution. This is quite special in comparison with corporate entities which are controlled by shareholders according to their investment share and where business decisions are made by corporate directors; this is also unlike nonprofit organizations which are usually controlled by a board of directors who are not receiving the services and are serving on a voluntary basis.

The cooperative business model is present in numerous sectors of the economy (ICA, 2011), including public utility cooperatives in telecommunication, water or electricity. In Finland, for instance, the telephone network was largely built by telephone cooperatives. In the US, the first public utility cooperatives were created after the great Depression to bring telephone services and electric power to rural areas and today they are numerous cooperatively organized electric utilities in the US. Recent research indicates that successful RE projects are typically managed by cooperative ventures rather than money making corporations (Subbarao and Lloyd, 2011).

In order to develop the adoption of RE, the cooperatives have to seek to influence the behaviour of their members so that they switch from the use of traditional fossil energy to RE. New behaviours are frequently adopted because friends, colleagues, or family members have adopted the behaviour—a process known as social diffusion (Rogers, 2003), and there have already been campaigns which have been used to promote involvement in behaviours such as recycling (Zikmund and Stanton, 1971), or promoting eco-literacy (Taylor and Muller, 1992). But various researches have shown that simply providing information is usually not sufficient to initiate behaviour change in communities in order to reduce their impact on the environment (Geller, 1981; Midden et al., 1983; Schultz, 2002; Environment Canada, 2006).

McKenzie-Mohr (2011) advocates that to initiate behaviour change, it is most effective to achieve social marketing initiatives delivered at the community level that focus on removing barriers to an activity while simultaneously enhancing the activity's benefits. But, regarding the identification of those barriers in the case of RE, research provides little information for two reasons. First environmentally-oriented social marketing campaigns tend to focus on a relatively narrow range of behaviours including recycling, lawn-watering and commuting to work (Gilani and Sharif, 2011). Those campaigns are more related to reduction in the consumption of water, energy and domestic pesticides more than in the market development of new eco-technologies (Jansson et al., 2010). Second, each form of sustainable behaviour seems to have its own set of perceived barriers and benefits (Oskamp et al., 1991).

Hence, the purpose of this research is to understand the barriers to adoption of RE and the way cooperatives are circumventing those obstacles in order to develop the use of RE. To do so, our paper is structured as follows: first, we examine, within the Innovation Diffusion literature how the Technology Acceptance Model, in its different variation, contributes to identifying the barriers that the co-ops are facing to the adoption of RE. Next we introduce the methodology of our qualitative small scale research. We then discuss the findings about their community-based social marketing initiatives to mitigate those barriers in order to facilitate the adoption of RE. Finally we conclude by outlining study limitations and setting an agenda for further research.

2. Theoretical background

Various theoretical frameworks have been developed to explain the barriers between the possession of environmental knowledge awareness, and displaying pro-environmental behaviour. The rationalist models of the early 1970s assumed that educating people about environmental issues would automatically result in more pro-environmental behaviour (Burgess et al., 1998). The failure of campaign based on this assumption prompted the emergence of “psychological models” on responsible environmental behaviour (Hines et al., 1986–87; Hungerford and Volk, 1990; Sia et al., 1985–86). In the 1990s those models were completed with sociological research such as Blake (1999) who identifies three barriers to action: individuality, responsibility, and practicality. Kollmuss and Agyeman (2002) combine the psychological and the sociological analysis and distinguish external factors and internal factors.

Those models come with interesting results but are applied in the context of adapting, or changing or restraining an existing consumption more than adopting a new technology. They are not extremely helpful when trying to identify the barriers to adoption to RE.

Another way to think about RE is to conceptualize it as an innovation. The pioneering work of Rogers (1962), about the Diffusion of Innovation (DOI), has been applied and extended to numerous category of diffusion, from information technology (Simpson, 2005) to education (Napierkowski and Parsons, 1995 or CSR (McManus, 2008). Rogers (2003) divides adopters into categories – innovators, early adopters, early majority, and laggards – and argues that there is a powerful influential role to be played by opinion leaders and change agents in diffusing innovation in a community through their social networks. The objective of DOI research is to explain or predict rates and patterns of innovation adoption over time and/or space.

But when it comes to Technology innovation, the Technology Acceptance Model (TAM) is widely accepted as one of the dominant theories to explain the process of user acceptance of high tech products.

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