Case Study „Solartaxi" Austria

Wolfgang Haider
Margit Hofer
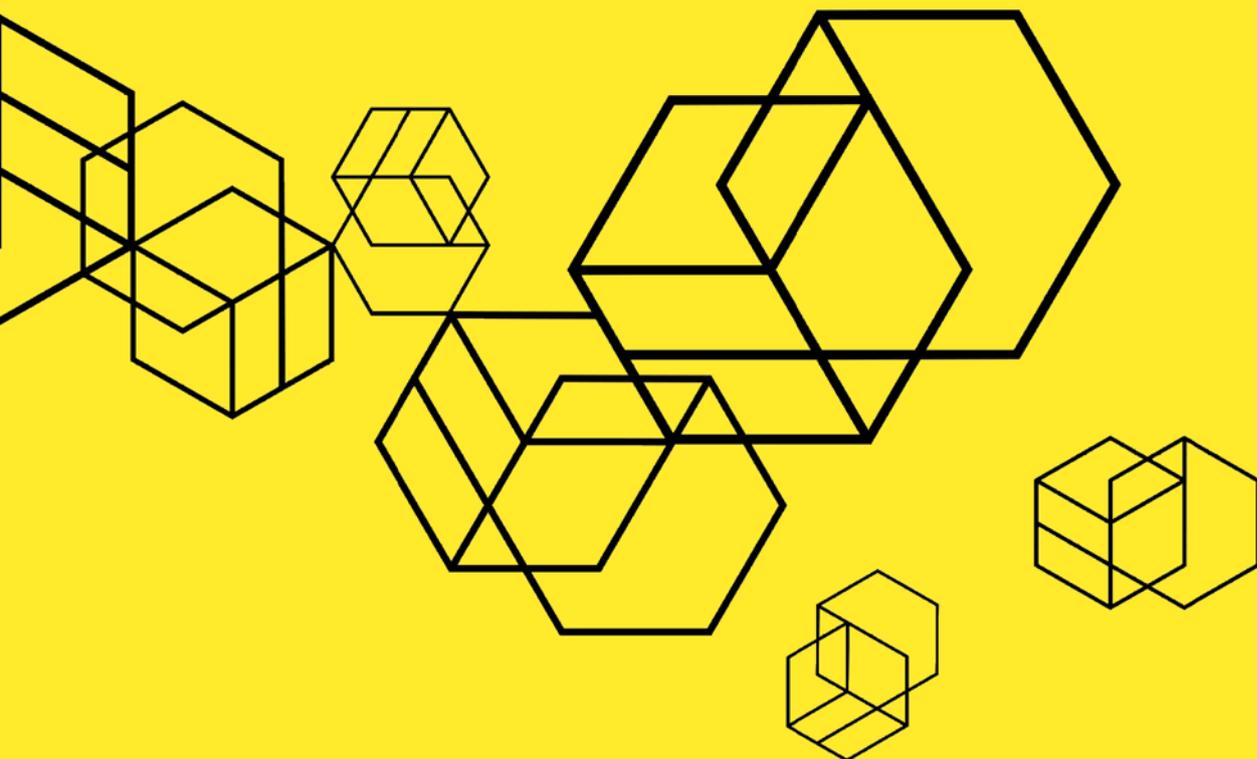
Case Study "Solartaxi"

1. ABSTRACT

The case describes the learning process in the establishment and upscaling of the Solartaxi Heidenreichstein. Austria's first e-taxi powered with electricity from solar power plants offers low-fare mobility services in a small Austrian municipality. For the price of 2 EUR or 2 Waldviertler (the region's complementary local currency which has been a success in promoting local business so far) passengers may ride anywhere within the municipality of this small village in Austria's economically, socially and infrastructure-wise weakest region. Thus affordable and sustainable mobility is offered to the not-so-well off and also the necessity to own more cars per household (this region also has the highest car per capita ownership in Austria due to its weak infrastructure) is lessened. The SI is well embedded into the region's solidary economy system and well connected with key stakeholders. However, getting to this point was not easy and project team had to undergo a steep learning process, especially in the initial phase of the implementation process.

Getting the interests of various stakeholders aligned to allow a flourishing development of the social innovation was challenging. In particular, harmonization of various political interests and overcoming of reservations against the project is a long-lasting and still ongoing process. Social workers from local church institutions and project managers from Solarmobil Austria saw the need for such a service, which is offered in many other small municipalities in Austria with regular combustion-engine cars/small buses. The idea had been around for a while; however the role of the initiators (some of the region's older and trusted social activists, e. g. Karl Immervoll, a well-known theologian and local activist) was of big importance for this region. The region's poverty and lack in infrastructure on the one hand and its long history of local business initiatives with a strong social and environmental focus on the other was a clear success factor for the SI initiation.

2. DESCRIPTION OF THE CASE

THE CONTEXT

The Solartaxi is Austria's first e-taxi powered with electricity from solar power plants offers low-fare mobility services in a small Austrian municipality. For the price of 2 EUR or 2 "Waldviertler" (the regions complementary local currency which has been a success in promoting local business so far) passengers may ride anywhere within the municipality of this small village in Austria's economically, socially and infrastructure-wise weakest region. Thus affordable and sustainable mobility is offered to the not-so-well off and also the necessity to own more cars per household (this region also has the highest car per capita ownership in Austria due to its weak infrastructure) is lessened.

Furthermore, a big problem of this region is the high rate of emigration. Due to the poor labour market conditions

a lot of young people are moving away to the capital region of Vienna or other cities in the state of lower Austria were they expect better job opportunities. For example in the last three decades the municipality of the project has lost 1.500 of its inhabitants since its peak in 1973. Currently the town has just about 4000 inhabitants. Of these inhabitants more than 50% are 50 years or older which is well above the general age structure in Austria. At the same time the area of the municipality has almost doubled to 58,44 km². Commercial and industrial areas are at the outskirts of the city as are some neighborhoods which therefore are poorly connected to the city center and almost unreachable by public transportation. The lack of population density in the area (many people live in remote and very small neighbourhoods) makes any type of mobility/transport costly, which is why public transport in the region has been cut back or even cut off completely.

The SI is well embedded into the region's solidary economy system and well connected with key stakeholders. An important part of the solidary economy system in the region is the aforementioned "Waldviertler" (named after the region). This local currency was founded as a measure to combat capital flight from the economically weak north-east region of Austria and to revive economic cycles within this region. So far the currency has had considerable impact and is one of the most prominent examples of local currencies in German-speaking countries. As of Autumn 2016 206 businesses and cooperatives accept the "Waldviertler" as valid paying method. This shows that the social innovation was implemented in a context where some experiences with alternative modes of value creation exists. A small but very active scene of social innovators - such as the Waldviertler's Co-founder Karl Immervoll who is also involved in the Solartaxi – prepared the groundwork for the implementation of the case study in a region that faces multiple economic, social and political challenges.

The idea of a Solartaxi idea had been around in the region for some time, however a number of municipalities did not dare to experiment with the idea, not even Großschönau municipality, otherwise renowned as one of the leading sustainable energy municipalities in Austria. Most regions lacked the political/economic/social infrastructure. Heidenreichstein municipality adopted the SI as it is the epicentre of the regional alternative currency (the Waldviertler) and local business is always interested in solutions keeping money flows in the region. A big obstacle on the way to the successful implementation of the SI was the absence of political support from the governing parties. However, the strong network of socially innovative businesses with political and wider civil society contacts to other, made the implementation finally possible.

THE CASE

The concept of the Solartaxi Heidenreichstein is a non-profit taxi service offering sustainable e-mobility services (a taxi powered with mostly solar and a bit of wind energy) to citizens in Austria's least developed region. It has the organizational from of a club and only members of the club can use the services of the two taxis, which are operated by part-time working professional drivers.Members of the club can simply call the drivers during operating hours and are then picked up and transported to a destination inside the borders of the community of Heidenreichstein. The membership is required due to legal reasons. In the course of the year 2016 the project team managed to secure various forms of funding (e.g. by aforementioned businesses or through the collection of a membership fee) that in the future will supplement and substitute parts of the public funding (e.g. though the state
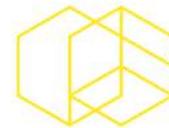
of Lower Austria) on which the project relies.

This affordable mobility service helps town centers to be revived again. Local businesses nowadays heavily support the service, but were skeptical at the beginning. However, in the first phase of the project implementation the local businesses saw that this service of affordable mobility brings people and thus customers back into town centers again. The region is otherwise known for its lack of infrastructure and its residents spread across the region to smallest residential zones, thus dependent on a car in order to participate in economic or social life. As mentioned before the region has Austria's highest rate of car ownership which is especially striking because it is one of the – relatively speaking – poorest regions as well. Other options like public transportation are either hardly available or comparatively expensive. At the same time the SI is tackling the issue of the environmentally problematic over usage of privately owned cars by offering a sustainable form of transportation to the inhabitants of Heidenreichstein.

Furthermore, affordable eco-friendly mobility offers many opportunities for social contact and exchange. This provides the opportunity for social inclusion for those who are otherwise excluded from social life for not being able to afford an own car. Especially because of the already described demographic structure of the region – over 50% of the population is over 50 years old – this social inclusion is a very important factor. According to Karl Immervoll, co-founder and key innovator during the implementation of the project, elderly people are one of the main user groups of the Solartaxi. He described cases of elderly people who were not able to go to the town center anymore because of a lack of public transportation and social connections now use the Solartaxi to go to the city center and do their shopping or go out for lunch together with other people. In this way the Solartaxi at the same time fosters social participation and supports local business like restaurants or the small grocery stores that are predominantly preferred by elderly people and add to a town's attractiveness. This way the Solartaxi offers a product that does not only substitute or supplement other services, such as the costly delivery of food to elderly people living remotely, but at the same time creates new possibilities for local business. Besides the usage of elderly people the taxi is also of interest to younger members of society. In the course of its implementation the Solartaxi was used increasingly by children and young people kids to meet up with their friends, be driven home from school if they live far off or get transport to various social activities like the practice of the local football club. This, at the same time, opens up possibilities for e.g. the mothers of children who in the countryside generally spend considerable amounts of time chauffeuring their children to these events. In some cases this even enabled mothers to take up job offers they had to refuse before.

In sum, the Solartaxi provides three kinds of resolutions to specific problems that exist in the region: Firstly, on a **social level** the SI enables that people who for either financial reasons or for other reasons such as age or disabilities are not very well embedded in the social network of the region and have no easy access to transport can easily and effectively be re-included into society. This does not only happen through the possibility of meeting friends in restaurants or doing shopping tours together. On a more basic level, for some people the regular interaction with the taxi-drivers is already a step towards breaking out of social isolation which is in fact a harsh reality for many, especially elderly, people in remote neighbourhoods of the region. To summarize it is to say that the Solartaxi is used by all demographic groups of the community but has a special focus on people who are in

danger of social exclusion through a lack of mobility (e.g. elderly people or people with disabilities). Secondly, on an **environmental level** the dependency on car ownership is weakened, which contributes to a better ecological balance and less CO2 emission. Thirdly, on a **technological level** the two solar-powered electrical cars are high-tech vehicles that operate in a very resource- efficient way in a region were the network of non-fossil transportation methods is almost inexistent – and indirectly advertise the possibility of sustainable mobility.

One of the most important actors in the implementation process of the project was Karl Immervoll, a local social activist and innovator, who already gathered a lot of experience in other social innovation projects in the region. Through his network and contacts the idea – originally brought up by Mr. Ernst Kieninger, the president of the Austrian Film-Archive – was brought out and developed in close cooperation with the population of the region. Other important actors were the municipality of Heidenreichstein, local businesses, regional political players and also the local taxi-driver companies. While Mr. Immervoll and his team struggled to get local business on board in the beginning the real challenge was to get the political support to proceed with the project. Another critical issue was the relationship of the Solartaxi to the local taxi businesses who were initially very skeptical about the project because they had fears that their business revenues would decline. Only in a long lasting process was the project able to overcome these barriers and to ensure the successful implementation of the social innovation. These processes were not least also learning processes, which will be described in the next chapter.

3. DESCRIPTION OF THE LEARNING PROCESS

The learning process during the implementation of the social innovation was a multidimensional one. A key requirement to understand the specific learning processes in innovative projects is to know about the history and personal experience of the key players in the innovation. For this case the key innovator was Karl Immervoll who was the driving force behind the efforts to establish the Solartaxi in Heidenreichstein. As an experienced activist and innovator in the region, he already had a considerable amount of knowledge about the phasing of a SI project and on the ways social innovations work and how they can be made popular, accepted, used and mainstreamed.

One of his most important maxims is never to start an initiative where the needs of the population are unclear and the benefits uncertain. As a first step in the learning process he confronts the people of the project region with his ideas or even gets his ideas for innovations just by talking to ordinary people. Through this first step he makes sure that the planned innovation fits the needs of the population and does not artificially create an innovation where there is none needed or where other problems are more pertinent. So in the first steps the following questions are asked:

01   Where do citizens perceive deficits?
02   How are these deficits changeable?
03   What are the skills/products needed to change the situation?

These are three guiding questions that do not only operate on an individual but also on a structural level and therefore are a suitable approach for all kinds of social innovations working on different levels. In the case of the

Solartaxi the idea was born beforehand and then Mr. Immervoll approached the citizens through various channels and explored their opinion on it, if it would make sense to them and if they would use it. He used surveys, newspaper announcements and presence in local market places to present the idea and to learn about the specific needs of the people. When it became clear that there was a need for an innovation like the Solartaxi and that people thought of it as an useful mobility supplement he began with the more concrete acquisition of support on political, financial and personnel level.

Especially getting the support of the political players in the region or rather in the county government was rather difficult. Due to the political power relations in Lower Austria – the Conservative party has been governing without interruption since 1945 and in Austria'a federal structure is a weighty actor on the national level as well – it is not easy to get something innovative and useful going if you are not a member of this particular party. The support that Mr. Immervoll received was mainly from the opposition parties, the Social Democratic and the Green party, which are not well able to contribute funds and do not have substantial influence in the allocation of municipal or country budgets. Therefore it was hard to get the project going because initial start-up funding was needed to e.g. buy the cars and install the garage for the cars. This problem was one that Mr. Immervoll had encountered in previous projects and already had learnt that a wide-spread network of people working in different kind of areas and with different political backgrounds is needed to overcome these barriers. Activating his widely spread network – he was able to overcome the hurdles and to get the project going.

A similar kind of problem was the conflict of interest with local taxi-driver companies. These companies were skeptical about the project because of the possible loss of customers and it took the project innovators quite some time to make sure that the clients of the project customers would not withdraw business from taxis. At this point it became necessary for Mr. Immervoll to get acquainted with the particularities of the Austrian law for transporting people. Mr. Immervoll described this as a mere task of "knowledge acquisition" where he only needed to collect knowledge that was available through either documents or conversations with knowledgeable persons from his network

A next step in the implementation of the project, and actually an ongoing and continuous process is the one of "knowledge distribution". As Mr. Immervoll already has a lot of experience with SI´s he is eager to accompany and counsel his fellow innovators on the various relevant topics during the implementation of an innovation. He described regular meetings among the project's initiators where they discussed upcoming challenges and how they could handle them. While he clearly was the most experienced activist on the project he made a point of not putting himself in a hierarchically superior position but rather tried to openly share his knowledge and herby enable collective learning processes. Meanwhile, the Solartaxis have been handed over to a newly formed association, of which Mr. Immervoll is no longer part. So in this project, as in many others that he initiated and managed for a crucial amount of time, he basically acted as a fixed-term initiator and promoter and prepared his co-workers from day one on to take over the project. So it is clear that in the course of the project implementation manifold learning processes took place. Sometimes Mr. Immervoll was at the center of the distribution of knowledge; sometimes he learnt something new for himself.

However, he describes the personal level as very important. With his background as social worker he is eager to approach people on an equal level and to give them the possibility to develop their abilities. This was also an important component in the selection of the taxi drivers. Very soon it became clear that they would have to be more than just drivers and would also have the opportunity to act in the capacity of some kind of low-threshold social workers (not unlike the traditional extra roles of grocers or postmen and –women in the country in times of less lean and cost-driven infrastructures). This was a very important learning processes for the drivers because their job actually was more than just driving and included the function of a "contact person" who was here for the customers – often socially isolated people – to talk to about everyday topics. Hence, drivers build up a kind of familiar relationship with their regular passengers and sometimes are also confronted with unknown situations or problems that go beyond the usual role of taxi drivers. To fulfill this role, it is of special importance that somebody supports them on this role learning process who has experience with social work, coaching or a similar field. Mr. Immervoll refers to this learning process as a "personal development" that is occurring in social innovations and that can be very beneficial for the people who work in this specific SI. He considers his work to be crucially connected to the abilities of the persons that are working on it and wants to foster and enable the development of these personal abilities.

Summing up, different types of learning process occurred during (and before) the project implantation that were crucial to the success of the project. These learning processes are mediated through different forms of knowledge acquisition and distribution, from identifying local needs through researching new subjects such as legal matters to developing enriched and innovative service roles and competencies) and are fundamentally connected to both personal and regional development. In the next chapter these different kind of learning processes will be embedded in a theoretical context and discussed from a scientific point of view.

4. DISCUSSION

In most cases learning can be related to several learning theories and paradigms due to the manifold aspects in individual and collective learning scenarios.

This applies also to the Solar Taxi innovation case. What is described as pure 'knowledge acquisition'(legal aspects of Austrian transport) obviously could be settled with the classical cognitive learning paradigm. Cognitivism is a learning theory according to which mental processes mediate learning and learning entails the construction or reshaping of mental schemata. Simplified cognitive learning considers how information is processed in the mind including how people perceive, think, remember, learn, solve problems, and direct their attention to one stimulus rather than another (Ertmer and Newby 1993). Still, learners do bring some pre-knowledge with them, especially in the case of the main innovator, Mr. Immervoll. Thus, the learning that originally could be regarded as 'pure knowledge acquisition' could be viewed as well through a constructivist approach that posits that learning is an active, constructive process. The learner actively constructs or creates his/her own subjective representations of objective reality. New information is linked to prior knowledge, thus mental representations are inevitably contextualised and specific (cf. Cooper, 1993, Piaget 2013, Vygotsky 1980).

However, learning in social innovation generally goes beyond individual learning. The project and its key promotor deliberately paid close attention to 'knowledge distribution'. This brings one further aspect to mind: learning that takes place in a specific group of people that share the same interests or have common problems to solve is addressed by the concept of "communities of practice".

As for the first view, the pedagogical theory of Community of Practice (CoP) developed by Jean Lave and Etienne Wenger in 1991 fits well for the described case. Wenger (1991) summarizes Communities of Practice (CoP) as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly." Learning is not necessarily intentional, but three major components are required. Firstly, the domain that is a common topic or interest that is shared and committed to. Secondly a community, meaning a group of people that interact and engage in shared activities, help each other, and share information with each other. And finally a practice that develops over time in which the members develop a shared repertoire of resources, helpful tools, experiences, stories, ways of handling typical problems, etc.

The Solar Taxi case suggests that some sort of social learning occurred within this CoP and beyond. Social learning requires a group of people, or a community that learn from one another, via observation, imitation, and modelling. This social learning theory by Bandura (1977) is often referred to as a bridge between behaviourist and cognitive learning theories because it encompasses attention, memory, and motivation. *"Most human behavior is learned observationally through modeling: from observing others, one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action."* (Bandura 1977). Social learning theory explains human behaviour in terms of continuous reciprocal interaction between cognitive, behavioural, and environmental influences. In his role as leading innovator and former social worker, we may conclude that Mr. Immervoll, deliberately sharing his skills and experiences, also acts as role model for the other innovation team members, especially due to the high efforts to engage different stakeholders.

Finally, the practical experiences of the drivers are explicitly mentioned in the case that leads to further learning and personal development.

On a theoretical approach, the situated learning theory by Jean Lave (1988) is one model of learning in a CoP that can serve well to this individual learning process. Lave argues that learning is situated. It is embedded within activity, context and culture and is usually unintentional rather than deliberate.

At its simplest, situated learning takes place in the same context in which it is applied. Lave and Wenger (1991)argue that learning should not be viewed as simply the transmission of abstract and decontextualized knowledge from one individual to another, but as a social process in which knowledge is co-constructed; they suggest that such learning is situated in a specific context and embedded within a particular social and physical environment. In the case of the solar taxi drivers, a 'social learning' takes place in the taxis by the interaction with their customers that require high social competences. The collaboration and advice of other social workers is explicitly emphasised as a way to foster this individual social learning and development.

Within this CoP of the Solar taxis, the taxi drivers ideally will develop further in their social competences. They

may, over time, play an increasingly important role in this community of practice through development of their user-facing role as representatives of the project and its socially innovative and inclusive aims beyond transportation,. As outlined in the case description, this was also the intension of Mr. Immervoll: to empower the taxi drivers and the other stakeholders to engage and commit resulting in competently acting within the social culture of the Solar taxi project and its wider aims as a focus of social innovation a region that both needs it and develops the capacities for it.

5. REFERENCES

Bandura, A. (1977). Social Learning Theory. New York: General Learning Press.

Cooper, P. A. (1993). Paradigm Shifts in Designed Instruction: From Behaviorism to Cognitivism to Constructivism. Educational technology, 33(5), 12-19.

Ertmer, P.A., Newby, T.J. (1993). "Behaviorism, Cognitivism, Constructivism: Comparing Critical Features From an Instructional Design Perspective" by is reprinted from Performance Improvement Quarterly, 6(4), 1993, pp. 50–72. doi: 10.1111/j.1937-8327.1993.tb00605.x

Lave, J. (1991). Situating learning in communities of practice. Perspectives on socially shared cognition, 2, 63-82.

Lave, J., & Wenger, E. (1998). Communities of practice: Learning, meaning, and identity.

Lave, J. (1988). Cognition in Practice: Mind, mathematics, and culture in everyday life. Cambridge, UK: Cambridge University Press.

Lave, J., & Wenger, E. (1991) Situated Learning. Legitimate peripheral participation, Cambridge: University of Cambridge Press

Piaget, J. (2013). The construction of reality in the child (Vol. 82). Routledge.

Vygotsky, L. S. (1980). Mind in society: The development of higher psychological processes. Harvard university press.