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FROM LARGE-SCALE COMMUNIST AGRICULTURAL PREMISE THROUGH ABANDONED CONTAMINATED RUIN TO ORGANIC FARMING PRODUCTION: THE STORY OF SUCCESSFUL POST-AGRICULTURAL BROWNFIELD REGENERATION

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Abstract

In the post-socialist period, rural areas of Central and Eastern Europe underwent a complex transformation process that resulted in creation of numerous large-scale abandoned post-agricultural premises not unlike industrial brownfields. Our study aims to reveal hidden but critical points of successful and sustainable regeneration of abandoned and contaminated ruin of the former socialistic cowshed that can be transferred to other communities dealing with a similar issue. Our case study is located in the municipality Čejkovice in the South Moravian Region, Czech Republic. By means of qualitative analysis of all available documentation and interviews with stakeholders, we followed the unique and complicated story of the 30 years lasting (between 1990-2020) regeneration. The following factors governing successful regeneration process were identified: i) orientation on pro-environmental production encompassing certified organic agriculture; ii) preserving of heritage of the site; iii) transfer of know-how and support of start-up financial capital from Austria; iv) existing external market for products; v) networking of partners and cooperation with local farmers; vi) educational activities in the field of environmentally friendly agricultural production; vii) innovation in the field of greening of production, storage and distribution of products; viii) development of tourism activities as a specific way of communication with customers and potential suppliers.

Keywords: redevelopment, brownfield, post-communist transformation, environmentally friendly solutions, Czech Republic

INTRODUCTION

Countryside and agriculture in Central and Eastern Europe experienced a complex development during the 20th century (Banski, 2018; Jancak & Gotz, 1997; Sarris et al., 1999). Both were

substantially influenced by numerous historical and political turbulences that led to paradoxes that agricultural regions and systems located in similar natural conditions on the different sides of the Iron Curtain developed differently (Veznik & Bartosova, 2004). While in some countries, such as Austria, small family farms have been preserved and the traditional landscape structure maintained (Penz, 1997), in other countries, such as the former Czechoslovakia, Soviet models have been thoroughly applied in agricultural policies (Jancak et al., 2019). In other words, after the communist takeover of power in the late 1940s, the system of small-scale, family-owned farms was hastily replaced by the large-scale agricultural production based on collective ownership of agricultural land and related facilities by means of communist agricultural cooperatives (Halamska, 2008). The overall aim of the new communist agriculture was to increase food production by using mechanization that was supported by the use of herbicides, pesticides, insecticides, and fungicides in crop production or the creation of economically more feasible large-scale farms. The communist rulers mainly aimed to gain control over the countryside and rid of independent farmers as opposers of the new regime. Changes in agriculture and rural regions that were celebrated as an extremely progressive way leading to the creation of 'the new world' brought persecution to many farmers and their families (Borsa, 2012), who independently cultivated their agricultural land for decades or centuries, and led to the liquidation of the vast majority of independent private farmers in former Czechoslovakia.

Following the collapse of communism in the late 1980s, significant changes and challenges occurred in the agricultural sector, which deeply structurally affected and deformed the development of rural areas (Banski, 2017; Jancak et al., 2019). While in the centrally planned economy the emphasis was on the national self-sufficiency in food production that was enormously supported by the central government, in the new market environment food producers started to be exposed to cheaper food imports and consequently many of the non-competitive agricultural production sectors simply collapsed (Csatari et al., 2019; Doucha & Divila, 2008). This development affected especially the oversized livestock sector and, as a result, many cowsheds, piggeries, and other agricultural premises ceased to function and became abandoned (Svobodova & Veznik, 2009; Veznik et al., 2013). After years of abandonment, these buildings quickly decay and their surroundings are now overgrown with shrubs and trees (Klusacek et al., 2013). Moreover, plenty of these sites are typical by the occurrence of contaminated soils and poor technical state of building construction does not allow their reasonable re-use for needs of rural communities. Instead, new buildings are often located on agricultural land. As a result, numerous abandoned post-agricultural brownfields have spread over rural regions in Central and Eastern Europe (Krejci et al., 2021; Navratil et al., 2019).

Studies show that the spatial distribution of post-agricultural brownfields is not random (Liu et al., 2014) but it is rather dependent on the spatial unevenness of environmental and economic factors (Filip & Cocean, 2012) that developed during the transformation process of post-socialist rural spaces (Bezemer, 2000; Jancak et al., 2019). The presence of large-scale post-agricultural brownfields has been shown to be an important barrier to the sustainable development of rural areas (Klusacek et al., 2013; Skala et al., 2013). We can also look at these sites and their location in rural communities through the lens of environmental (in)justice (Dillon, 2014) that is intertwined with social injustice (Chan et al., 2019). The most recent findings signal that rural communities with agricultural brownfields are usually less successful as a result of their inability to remediate these properties (Ahmad et al., 2020). Through snowball effects, further negative impacts of the location of post-agricultural brownfields accumulate over time in their neighbourhoods (Liu et al., 2014) and negatively affect the well-being of the rural population. Namely, it is soil and water contamination (Bizo et al., 2015), the creation of illegal waste disposals (Hurley, 2016; Wendel & Mihelcic, 2009), the creation of artificial barriers for potential development areas in villages (Antucheviciene & Zavadskas, 2008; Skala et al., 2013), or the general disturbance of aesthetic character that are all known as the elements of the negative impacts of rural brownfields (Petrea et al., 2011). As a result, communities with large-scale post-agricultural brownfields find themselves in a disadvantaged competitive position (Gallagher & Jackson, 2008) and the host rural community consequently unfairly suffers. The atmosphere of failure further deepens this disadvantage as soft factors towards development are depleted (Berg, 2017). This problem is especially relevant in the case of transitional economies (Gutnik & Trofimova, 2018) where development priorities often focus on urban cores and their economic success. However, in the field of rural brownfield regeneration, stories of best practices of their successful redevelopment play an invaluable and inspiring role (Klusacek et al., 2018; Osman et al., 2015) for other rural communities dealing with a similar issue.

The sustainable regeneration of the regions with numerous post-agricultural brownfields gradually belongs to the central points of rural development strategies. There is no doubt that there are a wide variety of possible regeneration options (Navratil et al., 2020); some options are naturally more sustainable than others. Previous research has shown that the successful regeneration of post-agricultural brownfields is usually centred on the local inhabitants and the ways in which they perceive individual regeneration possibilities, what the needs of individual communities are reflected, and how their opinions of the locals are taken into account in the decision making (Letang & Taylor, 2012; Marian-Potra et al., 2020). However, the vast majority of post-agricultural brownfields in the post-socialist space went through the recent ownership change as a result of the privatization and restitution of agricultural properties

(Bezemer, 2000; Doucha & Divila, 2008; Skala et al., 2013) which narrows the extent and focus of regeneration options available.

The quantitative analyses show that abandonment and regeneration of post-agricultural premises of formerly collectivized agriculture are simultaneous processes (Navratil et al., 2020) with a strong influence on rural development (Klusacek et al., 2021). Although the abandonment and persistence processes of post-agricultural brownfields are spatially linked to the particular socioeconomic determinants, on the other hand, the regeneration processes are rather spatially random (Krejci et al., 2021). It indeed seems that sole local circumstances are of a greater importance than overall regional processes (Haggett, 2001).

We argue that regeneration of individual derelict premises of formerly collectivized agriculture in Central and Eastern Europe has its unique story that is substantially shaped by many aspects of local circumstances and contexts. That is the reason why the main aim of our study is to reveal detailed factors influencing the successful regeneration of a large-scale and completely devastated post-agricultural brownfield into a prospering company that plays an important role as a good-practice example and a central point of spreading the idea of environmentally friendly agricultural production and organic farming. Our overall endeavour is to better understand and unravel the issue of how successful regeneration builds on unique local circumstances and what pieces of knowledge can be transferred to other communities dealing with a similar issue.

DATA AND METHODS

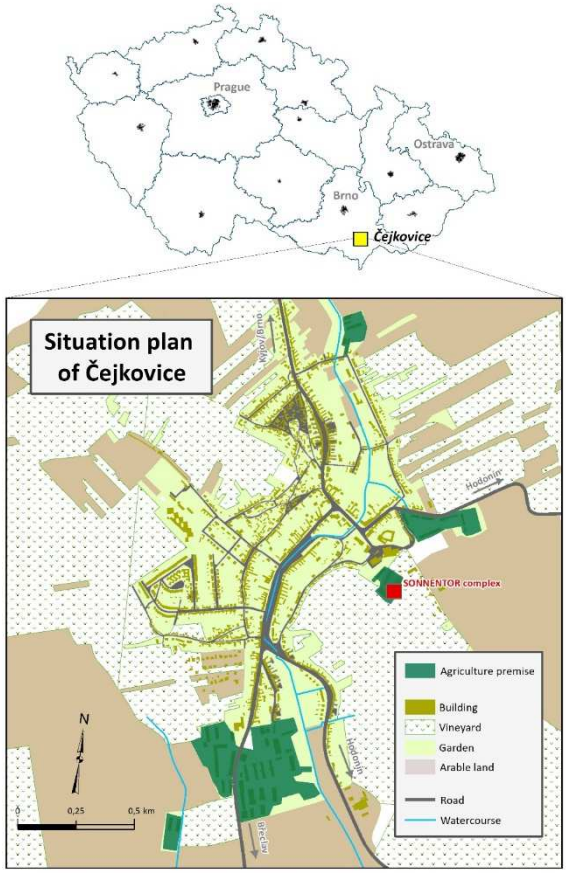
Case Study Location

The case study to capture the aim of our study was selected from the extensive database of regenerated agricultural brownfields (Navratil et al., 2020) located in the countryside in the Czech Republic. Out of dozens of cases, five sites were selected for a deeper investigation. After field visits to five concerned rural communities affected by successfully regenerated brownfields after agricultural activities, the former large-scale cowshed in Čejkovice in the eastern part of the Czech Republic (Fig. 1) that was abandoned, neglected, and devastated in the 1990s was selected for our study. The selection of the case study was based on the following principles:

- We were looking for regeneration located in the typical peripheral rural location far from the regional centre.
- The community where the regeneration is located is predominantly agricultural and is of average size in the eastern part of the Czech Republic.

- The site was supposed to be a former large-scale (and oversized) agricultural property that was built in the communist era, and agricultural activities collapsed in the early 1990s.
- The type of regeneration should be in favour of sustainable development.
- The locality should be located in the region with favourable natural conditions for agriculture.
- The site is located on the margins of the settled area of the community.

Figure 1 Location of the case study



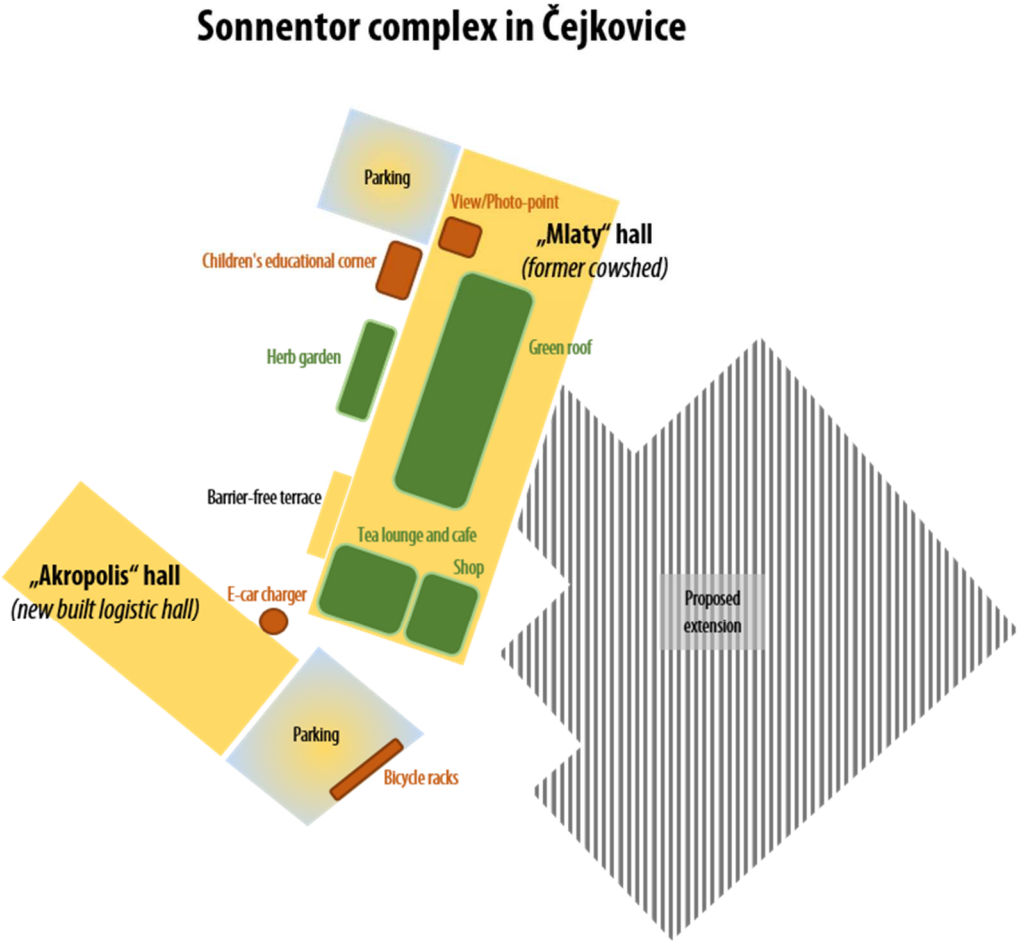
Source: own elaboration

Čejkovice is a typical rural municipality in the South Moravian Region (Fig. 1) with a population of 2,420 as of January 1, 2021. The municipality (with an area of 2,503 hectares) is located in an intensively agriculturally cultivated landscape in the 50 km distance from the regional capital city (Brno). Approximately 64% of the total area of the municipality is covered by arable land and 14% by vineyards. The share of non-agricultural land (forest land, water areas, built-up areas, and other areas) covers only 14% of the total area of the municipality.

Case study description

The studied site of the former cowshed that is located on the edge of the built-up area of the village (Fig. 2).

Figure 2 Detailed plan of the locality studied and its location on the territory of Čejkovice



Source: own elaboration

In the 1990s, the abandoned and unused area of the former cowshed began to be used by drug addicts. At that time, garbage after using drugs and dirty clothes was frequently found on the neglected site, provoking strong criticism from the representatives of the municipality and the local church council. Additionally, the site burned down in the roof to mid-1990s, which caused the collapse of the roof (Fig. 3). Some local inhabitants started using the surroundings of the former agricultural cowshed as an illegal landfill and especially the silage pits were filled with huge amounts of household waste. For these reasons, the representatives of the municipality demanded that the owner demolish the site so that it would no longer be a source of issues for the surroundings. The original owners did not have the financial resources necessary for the demolition nor remediation, and until the end of 1990s no other investor was found.

Figure 3 The exterior of the former cowshed area before the start of redevelopment

Source: J. Dvořáček, with permission

Finally, the whole area was sold to the company named Czech Sonnentor. Remediation included the production of organic teas and organic spices and the development of the tourism centre. As the premises are not directly adjacent to residential areas, the new uses (e.g., production, storage, and distribution of organic teas and organic spices, development of tourism) do not conflict with the needs of quiet housing in residential parts of the rural municipality.

The company Sonnentor was founded in Austria in 1988, and its development is tightly connected to organic farming. The Czech branch of the Sonnentor company was founded as a subsidiary of the Austrian company in 1992. After its establishment, the Czech company developed its activities first in Čejkovice in the so-called '*Havlíčkův mlýn (Havlíček Mill)*' building, which was purchased in 1993 in a dilapidated condition and where reconstruction was completed in 1996. This building of '*Havlíčkův mlýn*' was located in the neighbourhood of residential housing and the company's development (mainly the increasing demands for transport and storage) did not have ideal conditions for future development in this location. Moreover, the interiors of the building soon ceased to suffice due to the growth of production, and therefore the company bought in 1999 an abandoned and ruined former cowshed in the same community that is our interest.

Data collection and handling

Several data sources were utilized for our analyses. First, the information that the company published on the Internet (e.g., the company's website, videos and interviews on its YouTube channel, the information from the company´s journal '*Radost*' – '*Joy*', the local newspapers) about its development and the regeneration of the area with the former dilapidated cowshed was analysed in detail. An important advantage was that the company strives for maximum transparency of its operations, which is related to its activities in the production of organic teas and organic spices from certified organic agriculture, where customers can expect maximum transparency and are not tolerant of the confidentiality of information related to production methods and their environmental impacts. On the other hand, all the information received had to be confirmed from other sources to avoid any misinterpretation and beautification of the regeneration story.

Then, the other data was collected by means of seven interviews with the different types of local actors, who represent different types of stakeholders related to the redevelopment process of the cowshed (see Tab. 1 for the overview of interviewees). First, interviews were conducted with actors who were directly involved in the whole process of redevelopment, and in the later stages of the research, interviews were focused on the communication partners who participated in only part of the process. At the end of each interview, the interviewees were asked for contacts on other stakeholders who can provide important information on the topic studied. The interviews usually lasted around 90 minutes. Explanation of the purpose of the study was always provided and the consent of individual participants with the use of data for our research was ensured.

Table 1 Overview of communication partners selected for interviews (anonymous style)

Type of partner for interview	Age category	Role in development process	Gender
The company executive manager	41-50 years	Leader of development process	M
Architect	31-40 years	Dealing with architectonical issues	M
Representatives of local government	41-50 years	Dealing with municipal development	M
Marketing expert	31-40 years	Dealing with marketing development	F
Farmer 1	31-40 years	Supplier of organic herbs	M
Farmer 2	51-60 years	Supplier of organic herbs	F
Representative of a partner store	31-40 years	Sales of company products	F

All interviews were conducted with physical participation of both parties and recorded, which was communicated to partners beforehand; everyone agreed to be recorded (Silverman, 2018). The interviews were subsequently rewritten and their transcripts were analysed using Atlas.ti software (Hwang, 2008). The same software was used to analyse the information from the materials that the studied company publishes on the Internet (e.g., website, company journal, newspapers). Data (both recordings and transcripts) were stored in the off-line repository, anonymized, and password protected to avoid any misuse. Participants were informed of the results of our study through individual emails and phone calls.

RESULTS

Regeneration of post-agricultural brownfield for the production of organic teas and organic spices

At the beginning of the regeneration process, the new owner had to deal with **the security of the site**, which the company executive manager commented on with the words:

"The first thing is safety and security, so we fenced it, the area, and because I was annoyed that someone was moving here without a mandate, so I had to make signs such as private property, or entry prohibited private land and…. since then, there has been peace."

Due to construction work, it was necessary **to negotiate with the neighbouring owner to use a common road**, and the architect commented on these negotiations in the following way:

"The access roads were not only owned by Sonnentor, but also belonged to the company Templářské sklepy (Templar Cellars), which are an important producer of wine ..... when heavy construction equipment such as excavators was to pass through common roads, the company from the neighbourhood was not satisfied with it ... there was a bit of such a rivalry, today it's fine, they live like good neighbours next to each other well ... ".

The new owner decided for the first period of remediation **not to demolish** the main dilapidated building of the former cowshed but decided **to use the walls** to build a production and storage hall (called '*Mlaty*', see Figure 2) for the production of organic teas and organic spices. The preservation of the walls proved **to be financially and technically demanding** for both static and hygienic reasons. It was necessary to strengthen the walls' foundations with a larger amount of concrete, because the owner decided to increase the walls from 3 meters to 6 meters due to efficient work with forklifts. For hygiene reasons, it was necessary to invest in **decontamination of the walls**, which was commented on by the company's executive in the way:

"It was a cowshed and the walls were soaked with cow excrements and urine .... we had to hire a company that performs high-pressure washing with water and they washed the whole walls with that water jet ... they actually stripped them of the significant part of mortar completely and washed the joints which are between the bricks .. It was again wrong due to the statics of the walls, so it had to invest to the torkret machine spaying new mortar on the old walls".

According to the architect the price paid for preservation of wall was unnecessarily high:

"Most builders who are considering whether to renovate or demolish and build a new one believe that they will simply save money, but usually at the final stage they find out that this was not the case ..... in this case the cost of the preservation and use of the walls was really high .....".

On the other hand, the company's executive described **the use of walls as part corporate strategy and philosophy**, because:

". . . when building within a predetermined space, the transformation is technically much easier than building on a greenfield, where it is limited only by the size of land and space for making mistakes, it is huge there."

In 2001, the first reconstruction, which was especially focused on the development of the company's production and storage facilities, was completed (Fig. 4).

In addition, the investor decided that the building would have **a flat green roof**, which increased the requirements in terms of statics of the former walls. This green roof, which is planted with succulents such as various coloured bats of nettle and stonecrop, prevents overheating of production and storage areas and promotes a microclimate, as it retains most of the rainfall and slows down runoff and water evaporation.

Figure 4 State of a new production and storage hall with name '*Mlaty*' after first reconstructions in 2001

Source: J. Dvořáček, with permission

The first period of regeneration ended in 2001 with the completion of the first hall of '*Mlaty*' (Fig. 2 and 5). However, a while later the company's production increased, and the production and storage capacities of the first hall ceased to be sufficient. Therefore, in 2007, the second period of building started, this time a new building was built in a place of the former silage trough (filled during the first phase of regeneration). A new hall called '*Akropolis*' (acropolis – which is reminiscent of the citadels of ancient Greek cities) (Fig. 2) was built, which began to be used for the production and storage of portioned organic teas. In connection with the construction of this hall, there were **concerns about the aesthetic impact of the building** on the appearance of the village Čejkovice, which the representatives of the local government commented on:

"They built such a large concrete columns and it looked like on Olympus, because it is on the horizon on a hill, so such a temple was built on the horizon ..... among some local people there were concerns about what it would look like on the hill ..... but in the end there is no bigger problems with that, because we are either used to it or the building is relatively without any serious aesthetic impact on landscape character."

The aesthetic level of the '*Akropolis*' hall was assessed more critically by the company's managing director over time, who said that:

"I take this hall as an architectural problem. We didn't have the money in this time, we made it at the site of the former silo, and it's just a box on a hill. Today we also think from that angle when we look at it from the surrounding hills. But the hall is standing, we can't tear it down. We have to accept things as they are . . . "

On the other hand, the architect appreciated the practicality of the construction, because:

". . . the silage pit was used to build an underground tunnel connecting the two halls, which strongly facilitates production and storage system. It is a nice example of how to use old structures of former brownfield for new need by means of innovative solutions."

Further greening of production and the development of the place as a new tourist centre

While in the first decade of the 21st century the attention was mainly focused on the development of production and storage capacities, in the second decade of the 21st century **the attention was focused on the development of tourist activities**. In 2010, the company organized the first Čejkovice **herbal festivities** for the visitors. At the end of the first decade of the twentieth century, companies **stopped selling their organic products through retail chains** because they wanted to reduce the prices of the products they sell. The pricing policy of retail chains was contrary to Sonnentor's philosophy of **using of quality organic raw materials (herbs and spices) from small farmers cultivating land in the system of certified organic**

agriculture, who cannot be as cheap as large farms. **The net of partner stores was created,** and the company's executive commented on the situation with the words:

"Sales fell for us, but we started to build our own stores. Now we have partner stores, all kinds of healthy food, delicacies, organic shops, we have a corner there and we want the customer to know our philosophy and not compare us to anonymously made tea."

The company emphasizes both in Čejkovice and in its own stores in two largest Czech cities (Prague, Brno) and in the partner stores in large Czech cities that these are not anonymous nonorganic or organic products, but that they process organic products from specific small farmers, who are cultivating the agricultural land according to rules of certified organic agriculture. Specific farmers from different countries are also on the packaging of organic products. In the products intended for German markets are farmers from German speaking countries, while in the products intended for the Czech market are farmers from the Czech Republic (Fig. 5) and there are farmers from developing countries on the packaging of spices, which have origin in tropical countries.

Figure 5 A Czech farmer on tea packaging for Czech market (left) and an Austrian farmer on tea packaging for German speaking markets with an English slogan "We have got no stockholders. We are stickholders! Together we show there is a better way to do business."

Source: P. Klusáček

In 2012, there was the second reconstruction of '*Mlaty*' hall, which was focused especially on the **development of tourism facilities**, especially the visitor centre in the front part of the former cowshed (Fig. 6) devoted to the promotion of their products.

Figure 6 Current state of '*Mlaty*' hall

Source: P. Klusáček

The need to promote the **product** is due to the fact that in the Czech Republic and in other countries, the vast majority of points of sale are located in cities. This is not surprising, as organic products have a higher price and more customers with higher purchasing power are gathering in cities. Urban inhabitants are also more often involved in tourism activities in rural regions. The company decided to use this and started to transform the area in Čejkovice for the needs of visitors interested in organic teas and organic spices. At the beginning of the development of tourist activities, there was a lack of experience, which the executive commented:

"When we started tourism and made a simple shop and a square garden next door and so many people came that we had to cancel it. We did it hastily."

The initial problems were overcome and the opportunities for visitors expanded to include the possibility of excursions in tea production, a visit to a cafe, a visit to a viewpoint with a photopoint, the possibility of sitting on a barrier-free terrace, the possibility of visiting the herb

garden of St. Hildegard, the possibility of visiting a children's educational corner with herbs and other plants. Visitors are also offered parking spaces, lockable bicycle stands, and the possibility of charging electric cars and e-bikes. **The development of tourist activities was also co-financed with a national subsidy**, because the company received support for the project "Herbal Paradise for all', which was supported by the state budget of the Czech Republic from the program of the Ministry of Regional Development of the Czech Republic. In 2019, the last year before the Covid epidemic situation, the Sonnentor complex in Čejkovice was visited by more than 50,000 visitors. Tourism activities are carried out continuously throughout the year, but a large number of visitors visit the site as part of **various events**. These are special events for visitors such as the pre-Easter fair, Mother's Day celebration, herbal vintage, holiday weekends for children, Čejkovice herbal festivities (Fig. 7), the St. Nicholas Advent weekend.

Figure 7 Visitors during the herbal festivities of 2015

Source: https://www.youtube.com/watch?v=ZEOmGzhCG7M

During the development of tourist activities, **further greening of production took place in the entire complex in Čejkovice.** Attention was focused on the development of **cleaner energy sources**. In 2012, a small photovoltaic power plant was installed on the roof of the '*Mlaty*' hall and in 2019 a second one was added to the Akropolis hall. Currently, 206 panels with an output of 29.4 kWp are installed on the Sonnentor. By producing electricity from a photovoltaic power plant, the company will cover about 7% of total consumption. The remaining electricity consumption for the Čejkovice site since 2012 is taken exclusively from renewable sources. During the processing of herbs and spices, technologically unusable dust is generated; it is actually production waste. This **herbal dust is pelleted, and the pellets are used to heat** the

company's premises. The pellets are burned in a special Petrojet 50 kW boiler designed to burn plant pellets. Depending on the fuel used, the boiler meets the emission limits of class 4 to 5. It is connected to a hot water tank with a volume of 3 m^2, from which the hot water is distributed throughout the Mlaty hall and is used for heating and domestic hot water. This boiler replaced the existing main source using propane as a heating medium. The company declares that the ratio of green energy is made up of energy from biomass, wind, biogas, water and the sun, with preference given to solar power plants, which have panels located on the roofs of buildings over those that stand on open land.

In 2013, the company acquired the first **CNG-powered cars**. Today, a total of 8 CNG cars are running and the company has 2 electric cars (Volkswagen E-Golf and Renault Twizy). There is also a **charging station for electric cars directly in the complex**. The fast-charging station and one electric car were acquired thanks to **co-financing from EU funds** within the project Support of low-carbon technologies in the company Sonnentor supported by the Operational Program Enterprise and Innovation for Competitiveness.

Innovative, environmentally friendly, and nonchemical solutions are used in the field of storage - for example, forms of biotechnical protection such as *Trichogramma evanescens* wasps against insect pests in warehouses. **Responsibility for the environment is also reflected in waste management**. Since 2016, all events for visitors in Čejkovice have been organized as part of the ZERO WASTE concept, where such materials are used that it is possible to **convert waste from events for visitors into biological compost**. Thanks to investments in minimizing waste production, the company has achieved that **91% of its packaging is fully recyclable** or from recyclable sources and will save 20 tons of plastics and 30 tons of paper per year by changing the material composition for bagged teas and reducing their weight. The company presents its basic principles such as the use of ecological packaging, a high proportion of manual work, direct trade, neutrality in CO_2 production, production without palm oil on the packaging of organic teas and organic spices (Fig. 8).

Figure 8 Basic principles of the company on the packaging of organic teas

Source: P. Klusáček

Indirect and direct support for organic model farming projects

The **company supports employment in the region by taking organic herbs from 30 family and small farms located in neighbour**. The number of Sonnentor organic farmers in the Czech Republic is still smaller in comparison to the state in Austria, where the Austrian Sonnnentor cooperates with 150 organic farmers, which is still related to the fact that small Czech family farms were liquidated during collectivization and not so many family farms develop after fall of the Iron Curtain that would be comparable to their importance for agricultural sector in Austria, where rural development was not disrupted by Stalinist experimentation. Events within Čejkovice are also important to **attract new Czech farmers**, and one farmer describes the start of cooperation in the following way:

"I participated in the very first Herb Vintage organized by Sonnentor. I forwarded a conversation with a company employee and decided to try growing herbs in addition to our current production. I sowed the marigold for a year, but it was dry, and I sowed it "straight", so when they came to see it from company, we didn't even find it. Then we went to training with other farmers and saw that the marigold was being sown in empty tombs, like when potatoes are pounded. We learned a lesson and it worked out the next year."

Networking with Czech organic farmers is important in terms of knowledge transfer, but also as technical support, because organic farming began after the fall of the Iron Curtain from zero, as another organic farmer Sonnentor put it:

"My father started growing herbs in 1989 when they returned 3 hectares of land to him. A lot of people from the area said it had no perspective, but my dad didn't give up. I helped my dad while I was studying and I enjoyed it. After graduating from school, I converted part of the land to organic and today we farm organically on a total area of 15 hectares."

Of course, most spices and some herbs cannot be grown in the climatic conditions of the Czech Republic and these products must be imported from other countries. In this context, **the company emphasizes the principles of direct trade** (Fig. 9), in which farmers from different countries and localities receive fair prices for their products. The executive commented on his experience of visiting and an organic farmer in the developing country in the following way:

"Less than two years ago, we were with a family and children in Sri Lanka, with a cinnamon grower. It was a poor village, just a few electrified houses, twenty-five hectares of forest, a green pepper plantation behind it and plants The guide explained to us that this is because every tenth plant goes to a monastery, where they take care of the elderly and poor children ..... Every visit of growers from developing countries is a huge slap in our minds "Why can't our society, so rich, take care of our parents, why do we flush with drinking water?"

Figure 9 Representative of the Czech Sonnentor during a visit to an organic farmer in Sri Lanka

Source: https://www.ekonews.cz/bio-suroviny-a-zadne-plasty-caje-sonnentor-ukazuji-ze-to-jde/

These successes in greening and social responsibility of the company's production are presented to visitors on site or via information screens in the visitor areas or via different channel and social media.

In 2011, **a project of a model organic farm** was born in Velké Hostěrádky, which is located 20 km from Čejkovice. The aim of the model organic farm project, which is provided in the form of a civic association of supporters of organic farming and whose founder includes the Czech Sonnentor, is to promote and support organic farming, environmental protection, and a healthy lifestyle. The company actively participated in this project by renting part of the agricultural land on which **several types of herbs are demonstrably grown**. The largest acreage is devoted to common marigold (*Calendula officinalis*), which is grown as the highest degree of propagation in organic seeds for the needs of Czech organic growers. There are also stands of lemon balm (*Melissa officinalis*), peppermint (*Mentha* spp.), cornflowers (*Centaurea cyanus*), eastern purple coneflower (*Echinacea purpurea*), and *Tagetes* plants. The last two named cultures were established in collaboration with the Institute of Botany of the CAS for research purposes.

The project is important for the company because it serves as research aimed at **improving techniques for growing organic herbs** and is also used as a **training area for potential organic farmers**, who are presented here not only techniques for growing organic herbs, but also techniques for drying organic herbs. There are events for those interested in the type of herb vintage, where they can collect organic herbs. The model organic farm project has the unique potential to present the viability of organic farming in practice, as it is located in the vicinity of several other organic farms with a total area of about 200 ha. Such a concentration of organic farms on arable land in the centre of the South Moravian Region is a unique phenomenon. The cultivation of organic herbs is only one of the activities of the model organic farm and other activities include the **cultivation of traditional and less traditional organic crops, the care of organic orchards and organic vineyards, the application of various sowing procedures and anti-erosion measures**. Part of this model organic farming project is also the breeding of pigs and sheep.

DISCUSSION

Several critical points of the regeneration of the site under study were found:

- Know-how and support of start-up financial capital from Austria
- The role as growth pole in the region

- Central point of transfer of pro-green technology
- Financing of the project: foreign investment, lack of money, and subsidies

Know-how and support from Austria

The project of the remediation of post-agricultural brownfield in the production of organic teas and organic spices is not of Czech origin. It was founded as a subsidiary of Austrian company in 1992. Its model that has been operating since 1988 in Austria has been applied in the post-socialistic rural context. An important factor of success is the location of the site and geographical proximity of the mother company (in nearby Lower Austria). Previously, it was shown that diffusion of innovations from the West is extremely important for the development of post-socialistic agriculture (Fendrychova & Jehlicka, 2018) but the lack of available investment is behind its low intensity of spreading (Tuna & Karantininis, 2021). Foreign investment was found to be one of the most important factors for the development of agriculture in Eastern Europe and other development realms (Sikandar et al., 2021). This is because foreign investment brings not only capital but also managerial and technological skills (Walkenhorst, 2000) – initial resource endowments and technology use were identified as the most important factors of transformation changes in agriculture of Central European countries (Swinnen & Vranken, 2010).

Geographical location is also one of the main points for successful redevelopment of derelict and abandoned post-production sites (Frantal & Martinat, 2013). The former cowshed in Čejkovice is not located in the central urban region, where brownfields are usually the most attractive for investors, but it is located on the highest hill of a picturesque wine growing village Čejkovice and the development of tourist activities could be supported by the fact that the village was already known as the destination for wine tourism. Geographic proximity facilitates communication with the parent company, which was reflected in the rapid development of the business in the Czech Republic.

Another important factor is the already existing customer network in German-speaking countries of the parent company. Production, despite massive cooperation with real and potential customers in the Czech Republic, ends on German speaking markets (80%). The domestic market consumes only 10% of the production made in Čejkovice. Starting the business with the existing market is easier, especially being foreign (Kotler & Keller, 2015).

On the other hand, the investment of Austrian company in the post-socialistic Czech Republic (in 1992, yet Czechoslovakia) was not without risk because the implementation of

"Western" practices has many unintended consequences, as was shown for organic farming in Latvia (Aistara, 2009). The Austrian model is dependent on the production of a long-term network of rather small local farmers and cultivated rural culture (Penz, 1997). The situation in rural Czech Republic in the 1990s was completely different with the transformation of agriculture and rural culture affected by 40 years of the collectivisation of soviet model (Jancak et al., 2019). The transition in post-soviet realm was strongly diversified (Bezemer, 2000) and influenced by the extent of the pre-reform distortions (Swinnen & Vranken, 2010) resulting in many difficulties for diffusion of the Western model of agricultural production and its processing (Fendrychova & Jehlicka, 2018) even in neighbouring regions (Bartel et al., 2018).

The role as growth pole in the region

In this case, the transfer of model was successful as investors started to cooperate with all potential producers of organic crops with the region. First, they began to develop its activities in the processing of organic products in the village, which was characterized by intensive production agriculture using chemical fertilizers and herbicides, pesticides, fungicides, etc. It was important for the company's image among the local inhabitants that it first used the ruins of the so-called Havlíček's mill for its development, and when this location ceased to have sufficient capacity, it used a dilapidated cowshed, which was a problem for the municipal development. The company emphasizes its local and regional identity on the packaging of some teas. From the point of view of local and micro-regional development, it is important that the company also became a major employer, which in 2020 employed 150 workers, which was almost half the number of Sonnetor employees in Austria, where there were 350 employees.

Still, the location of the company processing agricultural products induced development in adjacent areas and has an overall impact on the agribusiness in the region. Training programs, pilot demonstration projects, and innovative contract designs were found to secure quality raw material supplies while inducing sector-wide improvements in agricultural productivity and agribusiness practices (Walkenhorst, 2000). This is important especially in small communities of the post-socialist realm with scant bottom-up innovations (Gava et al., 2021) where the activity of stakeholders without examples of 'best practice' is very low (Atkociuniene et al., 2018; Fieldsend et al., 2004) usually due to its socialist and collectivized history (Bezak & Mitchley, 2014; Tuna & Karantininis, 2021).

Central point of pro-green technology transfer

The business under study has a wider impact than the enhancement of the agribusiness environment in the South Moravian countryside. It brings innovation in the field of greening of production, storage, and distribution of products. In the studied area is constantly invested in greening and already implemented investments in rooftop solar power plants, electro-mobility, waste minimization, use of production waste for hall heating or the planned investments in heat pumps and rainwater collection systems and its reuse. Transfer of new technologies within rural space is increasing agricultural technical efficiency, which is seen as a strategy to boost the level of living standards in agriculture and in rural areas (Bojnec et al., 2014).

Important for the local development of organic farming (it does not matter if certified or not) is the location of research that aims to improve techniques for growing organic herbs and is also used as a training area for potential organic farmers. The investor also cooperates with scientific institutions such as the Institute of Botany of the Czech Academy of Sciences. Such cooperation is in the post-socialist realm spare but needed (Dirimanova, 2018).

All these activities are important not only in terms of economic and environmental efficiency, but they strengthen the company's image in the eyes of potential groups of end-users and further spreading of the idea of the environmentally friendly agricultural production and processing of agricultural products. In the second decade of the 21st century, the company began to systematically build an offer for visitors, with specific attention paid to groups of visitors such as parents with children or cyclists, who can be expected to be more interested in environmental issues and organic products. This is again important for spreading the idea of pro-green behaviour through tourism activities.

Financing of the project – foreign investment, subsidies, and lack of money

The initial capital was important for the creation and development of the company in the 1990s, as well as for the start of the new boom of company in the area with the dilapidated cowshed at the beginning of the 21st century. Here, foreign investment was crucial as small farmers usually use for development only their own capital (Gava et al., 2021).

A certain role in the development of the studied project played subsidies. Financial support from subsidies was used especially for the development of tourist activities (the program of the Ministry of Regional Development of the Czech Republic) and then for the construction of the fast-charging station and the acquisition of one electric car (EU funds – the Operational Program Enterprise and Innovation for Competitiveness). Appropriate economic policy has been found to be of extreme importance for starting and developing business in agriculture in

the post-socialist realm (Anicic et al., 2021; Swinnen & Vranken, 2010), because subsidies are important drivers of agricultural change (Sang et al., 2014). It helped increase the operating surplus of the agricultural sector and the profitability of agricultural holdings through increasing profitability of commodities (Pechrova, 2014). Subsidies are an important source for financing of organic farming throughout Europe (Brzezina et al., 2017). On the other hand, subsidies induced only low number of starting of business in rural post-socialist realm (Mack et al., 2021), they can lead to the increased reliance on external financial support (Pechrova, 2014), and decimate agricultures in other parts of the world where subsidies are not present (Graddy-Lovelace & Diamond, 2017). But there is no doubt that subsidies have a positive impact on the adoption of pro-environmental measures in agriculture (Brzezina et al., 2017).

Besides foreign investment and co-financing of the project with subsidies and funds, critical issues rising from lack of money also rose. It is especially the case of the '*Akropolis*' building that was built in a period when there was a need for a new facility but money was lacking. This resulted in a low-cost solution of this issue. This decision almost ruined the former idea of not demolishing the old building and not building on greenfields. The aesthetics of the entire site was severely damaged, and in recent times thoughts of demolition of this building are present. Our research indicated here the wrong decision where a technically sufficient low-cost solution was adopted and the philosophy of the business plan was not taken into account.

CONCLUSION

The site studied shows the transformation and diversification of post-communist agriculture. The locality originally used for intensive Soviet-model collectivized agriculture began to decay shortly after the fall of the Iron Curtain in the early 1990s. The regeneration of the site in the 21st century has encompassed the development of organic tea and organic spices production using raw material from nearby small family farmers. The findings of the present study expand our knowledge regarding micro-aspects of factors of successful regeneration of post-agricultural brownfields, which are vastly different from urban and industrial brownfields.

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