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A Participatory, Innovative, and Sustainable Model in Local Development: Silivri Agricultural Production and Research Center (TURAM)

Yerel Kalkınmada Katılımcı, Yenilikçi ve Sürdürülebilir Bir Model: Silivri Tarımsal Üretim ve Araştırma Merkezi (TÜRAM)

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ABSTRACT

Since the 1980s, local and regional development approaches have broadened their focus beyond economic issues to encompass social, ecological, political, and cultural concerns. Innovation, knowledge, and learning have started to occupy a central role in local and regional development policy. Moreover, the role of local governments in local development has been strengthened. In Turkey, changes made to legislation in the 2000s brought rural areas under municipal administration. In line with these changes, Silivri Municipality established TURAM in 2010 with the participation of stakeholders, as well as TURAM Vocational and Technical High School in 2017, to contribute to local development. At TURAM, production, R&D, and training activities have been carried out in cooperation with NGOs and universities. This article presents the example of Silivri TURAM to argue that municipalities can create participatory, innovative, sustainable models and play a crucial role in fostering local development. In our study in 2022, the TURAM model was examined, and its social, economic, and environmental impacts were evaluated. In the study, primary qualitative data were obtained from face-to-face interviews with municipal employees and TURAM stakeholders using semi-structured forms. Secondary data were gathered from regional statistics, municipal documents, and online news related to TURAM's activities. Findings show that Silivri Municipality managed to implement a participatory, innovative, and sustainable model by effectively utilizing its limited resources. The model has positive social, economic, and environmental impacts, including the dissemination of high value-added products, the appropriate use of agricultural areas, and the facilitation of scientific research and education.

Keywords: Agriculture; innovation; local development model; participation; rural development; sustainability; TURAM.

ÖZ

1980'lerden bu yana, yerel ve bölgesel kalkınma yaklaşımları sosyal, ekolojik, politik ve kültürel endişeleri de kapsayacak şekilde genişlemiştir. Yenilik, bilgi ve öğrenme, yerel ve bölgesel kalkınma politikalarında önemli bir rol oynamaya başlamış, yerel yönetimlerin yerel kalkınmadaki rolü güçlenmiştir. Türkiye'de, 2000'lerde yapılan mevzuat değişiklikleriyle kırsal alanlar belediye yönetimlerine dahil edilmiştir. Silivri Belediyesi 2010 yılında paydaşların katılımıyla Tarımsal Üretim ve Araştırma Merkezi TURAM'ı ve 2017 yılında Silivri Özel Tarımsal Üretim ve Araştırma Merkezi Mesleki ve Teknik Anadolu Lisesi'ni hayata geçirerek yerel kalkınmaya katkıda bulunmuştur. TURAM'da, sivil toplum kuruluşları ve üniversitelerle işbirliği içinde üretim, Ar-Ge ve eğitim faaliyetleri yürütülmektedir. Bu makale, Silivri TURAM örneği üzerinden belediyelerin katılımcı, yenilikçi ve sürdürülebilir modeller oluşturabileceğini ve böylece yerel kalkınmada önemli bir rol oynayabileceğini ileri sürmektedir. 2022 yılında yapılan çalışmada TURAM modeli incelenmiş ve modelin sosyal, ekonomik ve çevresel etkileri değerlendirilmiştir. Çalışmada yarı yapılandırılmış formlar kullanılarak belediye çalışanları ve TURAM paydaşlarıyla yapılan yüz yüze görüşmelerden elde edilen birincil veriler kullanılmıştır. Kullanılan ikincil veriler ise bölgesel istatistiklerden, belediye dokümanlarından ve TURAM'ın faaliyetleriyle ilgili çevrimiçi haberlerden elde edilmiştir. Bulgular, Silivri Belediyesi'nin sınırlı kaynaklarını etkin bir şekilde kullanarak katılımcı, yenilikçi ve sürdürülebilir bir model ortaya koymayı başardığını göstermektedir. Model, yüksek katma değerli ürünlerin yaygınlaştırılması, tarım alanlarının amacına uygun kullanılması, eğitimin ve bilimsel araştırmaların desteklenmesi gibi sosyal, ekonomik ve çevresel alanlarda olumlu etkiler yaratmaktadır.

Anahtar sözcükler: Tarım; yenilikçilik; yerel kalkınma modeli; katılımcılık; kırsal kalkınma; sürdürülebilirlik; TURAM.

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1. Introduction

In recent years, approaches to local and regional development have broadened beyond economic issues to encompass social, ecological, political, and cultural concerns. New emphasis now falls on reducing social inequality, promoting environmental sustainability, and encouraging inclusive government and governance. Innovation, knowledge and learning have assumed a central role in local and regional development policy. Additionally, local governments and community-based groups have managed existing resources and entered partnership arrangements with the private sector or with each other to support local development. Local economic development strategies prioritize the participation of local actors and require a great deal of coordination and cooperation among all stakeholders. Moreover, rural settlements have assumed greater importance in regional development due to their social, cultural, economic, and spatial advantages. These changes in regional development policies for rural areas necessitate governance-oriented approaches as well. It has become important to involve stakeholders, especially local governments, non-governmental organizations (NGOs), and development agencies, in rural development processes. This perspective suggests that municipalities, as local governments, can go beyond their traditional tasks, e.g. building infrastructure, and play important roles in developing their cities.

In this context, we present the example of Silivri Agricultural Production and Research Center (TURAM) to argue that municipalities can create participatory, innovative, sustainable models and play a crucial role in fostering local development. Silivri is an agricultural district on the periphery of Istanbul. In the Istanbul Master Plan approved in 2009, nearly half of Silivri district was zoned agricultural. The plan's main goal is to make Silivri the agricultural production center of Istanbul. Silivri Municipality has supported that objective since 2009. TURAM was established in 2010 on 250 decares of publicly owned agricultural land, with the participation of stakeholders, to contribute to local development. In this area, production, training activities, and research and development (R&D) have been carried out in cooperation with NGOs and universities. In addition, Silivri TURAM Vocational and Technical High School was established by the municipality in 2017. Silivri TURAM has consistently positioned itself as a model for local development.

There are very few studies on the TURAM model, which is an important and unique local development experience in Turkey (Yılmaz, 2019). On the other hand, the 2024–2028 Istanbul Regional Plan aims to increase agricultural production in Istanbul and enhance Istanbul residents' access to healthy food. It also emphasizes increasing support, R&D activities, and training for farming practices in districts like Silivri, where agricultural production is concentrated (Istanbul Kalkınma Ajansı, 2022). Considering these goals, better

understanding the TURAM model and its experience will significantly contribute to the literature, the efforts of governments and their local development initiatives.

2. Materials and Methods

In this 2022 study, firstly, the model and operations of TURAM were analyzed. Primary data were collected through face-to-face interviews with municipal officials. Questions were asked to elicit details regarding TURAM's operations, activities conducted, actors involved, users, finance, processes and organization (Appendix 1a). Secondary data were obtained by reviewing reports, documents, and agricultural statistics for Silivri and Istanbul. The model was subsequently evaluated in two phases. The first phase assessed three categories: participation, innovation, and sustainability. In the second phase, the model's economic, social, and environmental impacts were evaluated. Due to the lack of sufficient records and data on TURAM's activities, semi-structured, face-to-face interviews were conducted with municipal officials and TURAM stakeholders including farmers, entrepreneurs, NGO representatives, university and high school staff as well as students. In the interviews, TURAM's general contributions to development in social, cultural, economic, and environmental contexts were examined, along with its contributions to farmers, education, the community, the municipality, Silivri and Istanbul; and its outputs such as job creation, education, raising awareness, and innovation. Additionally, stakeholders were asked about their expectations, suggestions, criticisms, and levels of satisfaction (Appendix 1b). Finally, stakeholders' views on the future of TURAM were gathered (Appendix 1c). The questions are listed in the appendix (Appendix 1). Secondary data related to TURAM's activities, such as research projects, educational initiatives, and Internet news reports were also reviewed. The study begins with an examination of regional, local, and rural development literature. The fourth part discusses Turkey's rural development experiences. The fifth part provides a brief overview of Silivri district's characteristics, then offers an in-depth examination and evaluation of TURAM. Our report concludes with a general assessment.

3. Theoretical Framework: Regional, Local, and Rural Development

Regional development can be defined as the ability of a region to produce goods and services demanded by the national and international economic system to which it belongs (Capello, 2009). Space influences the way an economic system works. It is the source of production factors and economic advantages such as high earnings. Space also provides geographical advantages such as raw material supply. In the mid-1970s, a radical change in the conceptualization of space gave it a very different role in development. Space was no longer perceived as a simple geographical container, but as an economic re-

source, an independent factor of production. By adopting this new notion of space, it is no longer possible to treat development as exogenous in origin. Development is, by definition, endogenous and region dependent (Capello, 2011). Among the internal factors affecting development are a region's entrepreneurial capability, local production resources such as labor and capital, and particularly the decision-making capacity of economic institutions and social actors who can control the development process (Capello, 2009). Moreover, development is a geographical phenomenon and does not occur out of geographic context (Pike et al., 2007).

Local and regional development has historically been dominated by economic concerns such as growth, income, and employment. With growing concerns about the character, quality, and sustainability of local and regional "development" in the 1980s, economic focus has expanded in recent years to address social, ecological, political and cultural concerns. Reducing social inequality, promoting environmental sustainability, promoting inclusive government and governance, and recognizing cultural diversity have been emphasized to varying degrees within expanded definitions of local and regional development (Pike et al., 2007). Innovation, knowledge and learning have started to occupy a central role in local and regional development policy (Pike et al., 2008). Among the main objectives of local economic development policies are goals such as strengthening the economy at the urban and regional level, creating new jobs, reducing unemployment and poverty, activating democratic and autonomous institutions and organizations in the formulation of local policies (Özden & Olgun, 2017). As a transformation process to overcome difficulties, economic development aims to raise the living standards of the local population by evaluating existing resources through different agencies (Yılmaz & Çelik Efşan, 2019). Local economic development is essentially a process in which governments and community-based groups manage their existing resources and enter partnership arrangements with the private sector or with each other to create new jobs and stimulate economic activity (Nel, 2001). Local economic development agencies are a very common practice model (Çetin, 2007). Unlike traditional development strategies created by central government planners and development institutions, local economic development strategies prioritize the participation of local actors and require a great deal of coordination and cooperation among all stakeholders (Rodríguez-Pose, 2001; Çetin, 2007).

In the 1980s, there was a shift towards endogenous development theories for rural areas as well (Çetin, 2007). In the endogenous development approach, economic and other activities ensure the return of profits to the local area through the evaluation and use of resources (Kacar et al., 2016; Adamowicz, 2020). On the other hand, another change observed in rural development is the shift from an approach that mainly focuses on the agricultural sector to a focus on

more diverse economic activities (Hodge & Midmore, 2008; Karakayaci, 2018; Merenkova et al., 2019; Adamowicz, 2020; Puzulis, 2021). Post-war rural development focused on the agricultural sector and gave priority to increasing food production. However, this approach has changed over time; a multi-sectoral understanding has emerged. In rural development, the focus may still be on farming, but agricultural diversification and sectoral diversity have also begun to be promoted (Hodge & Midmore, 2008). Nonetheless, weakening of the agricultural function is leading to de-agrarianization, and new non-agricultural production, service and consumption functions are being developed. Moreover, rural space is more commonly becoming a public asset as it is increasingly appropriated by city residents, entrepreneurs and tourists (Adamowicz, 2020). On the other hand, the multidimensional nature of rural areas gives them extremely heterogeneous characteristics. All relevant features must be an integral part of both development strategies and rural policy making (Jurjevic et al., 2021). With the influence of global and post-modern movements, rural settlements, which are ignored or seen as unimportant in traditional paradigms, have acquired significance as important elements of regional development because of their social, cultural, economic, and spatial advantages. These changes in regional development policies for rural areas necessitated governance-oriented approaches. Actors involved in the process of ensuring local development should determine common goals and coordinate among themselves to realize these goals. It has become important to involve the stakeholders, especially local governments, NGOs, and development agencies, in rural development processes (Yılmaz & Çelik Eşan, 2019; Özden & Olgun, 2017).

4. Turkey's Rural Development Experience

The natural and environmental characteristics of rural areas have been fundamental in agricultural production for many years, and solutions to rural development problems have been elaborated with economy-based approaches. Nevertheless, these could not achieve targeted development goals. With mechanization in agriculture and a parallel urban industrialization process, the dissolution of rural areas accelerated. With the advent of globalization, change and transformation continued in rural areas. Multi-actor governance must implement policies aiming for economic, social, spatial, and environmentally sustainable development (Yenigül, 2017).

These processes and changes can also be observed in rural policies in Turkey. Many development projects were produced and implemented at local, regional, and national levels in order to eliminate inequality between regions, but without much success (Güler et al., 2014; Yenigül, 2017; Erdönmez, 2005). In the 1960s and 1970s, the main rural development approaches and models were Model Village, Central Village, and Village-Town (Erdönmez, 2005; Güler et al., 2014). The common feature of

these models was that they aimed to concentrate public and infrastructure services in certain centers without unifying the villages themselves. The Model Village assumed that the positive results of works carried out in a central village would likewise affect the surrounding areas. The Central Village model aimed to turn these villages into service stations for the surrounding countryside. The aim of the Village-Town model was to provide services and investments such as health, education and industrialization to groups consisting of villages in close proximity (Güler et al., 2014). There were basic objectives such as improving income distribution, increasing development opportunities, production power and personal income, as well as accelerating development in rural areas (Bakırcı, 2003). Village-Town, the most comprehensive rural development project in Turkey, was implemented in different cities during different periods. However, the sustainability of these projects prepared by central governments could not be ensured.

After the 1980s, there were some changes in rural development policies. With the effect of neoliberal policies, important reform studies came to the fore in the Turkish public administration system. With these reforms, a form of governance was adopted in which decision-making and executive powers held by the state were shifted to local governments, semi-autonomous public institutions, professional organizations and non-governmental organizations. Local governments have been strengthened in parallel with neoliberal policies and the European Union (EU) harmonization process. Rural-urban distinction has been blurred, villages have been integrated with cities both physically and legally, which has led local governments to take a more active role in the development of rural areas. These areas have begun to be accepted as a new policy area in Turkey since the 2000s (Yenigül, 2017). Objectives such as conservation, diversifying the rural economy, creating alternative income sources, increasing non-agricultural employment, vocational training, social and physical rural infrastructure, and balancing interregional development have come to the fore (Küçüköğül & Türkoğlu, 2021).

Parallel to these developments, the inadequacy of the rural-urban distinction was reflected in laws regarding the settlement system. With regulations in the Metropolitan Municipality Law No. 5216 adopted in 2004, the municipal boundary expanded to potentially include rural outskirts as well. With the Law No. 6360 adopted in 2012, borders of metropolitan municipalities were identified with the provincial borders. All villages within these municipalities were transformed into districts of the city. The entire provincial area gained the designation of a city. With these regulations, it became more and more difficult to maintain an administrative city/rural divide, with its former definition based on demographic characteristics. When the difficulties of socio-economic and cultural rural/urban separation are added to this dynamic, the discussion about where the countryside ends and where the city begins

becomes much more interesting. These processes have also affected local governments' areas of authority, responsibility, and activity. For example, with the Metropolitan Municipality Law No. 5216, Izmir Metropolitan Municipality had 21 districts and 166 villages. Upon this development, Izmir Metropolitan Municipality established Turkey's first Department of Agriculture, Parks and Gardens in 2007. The purpose of this department is basically to ensure the development of agricultural activities in a way that enables development to start from a local position (Tekeli, 2017, pp. 66–67).

In parallel with these reforms, one of the most important actors is now local government. In rural areas, especially in agricultural development, local governments have important functions. For this, it is important to create a good organizational model (Özden & Olgun, 2017).

As seen since the 1980s, the focus of local development has expanded from an economic dimension to include social and environmental concerns. Participatory and multi-actor structures, where local actors and governments collaborate, have become prominent. Parallel to these global developments, local governments in Turkey have also become stronger since the 1990s. Rural areas have not only gained prominence but have also fallen under the responsibility of expanded urban municipalities. One of the rural development models that emerged as a result of these reforms is Silivri TURAM. TURAM has been conceived as a participatory, innovative, and sustainable project in line with the evolving understanding of worldwide development.

5. Silivri District of Istanbul

Silivri district is on the rural periphery of rapidly growing Istanbul (Fig. 1). This district on the Marmara Sea coast is at the westernmost point of Istanbul and is 70 km from the city center. The district has an area of 860 km² including agricultural lands.

Silivri has maintained its importance due to its natural harbor and location along important trade routes. Winemaking and other agricultural products have also historically contributed significantly to the settlement's economy. Silivri is a summer resort and also has a significant permanent population because it is a settlement along the coastal road of an important region with a very long history. The district has continued its existence as a secondary center that serves nearby village settlements and concentrates second-residence tourism (Istanbul Büyükşehir Belediyesi, 2021). Located on the E-5 and TEM highways connecting Turkey to Europe, Silivri is at the entry point of Istanbul and Kocaeli Peninsula, which is Turkey's largest commercial and industrial center (Silivri Sanayi ve İşadamları Derneği, 1995, p. 10). Today, this city is at the center of attraction for industries decentralized from the middle of Istanbul and has gradually shed its second-residence



Figure 1. Location of Silivri and TURAM in Istanbul (Wikipedia, 2014).

https://tr.m.wikipedia.org/wiki/Dosya:Turkey_Istanbul_location_map.svg

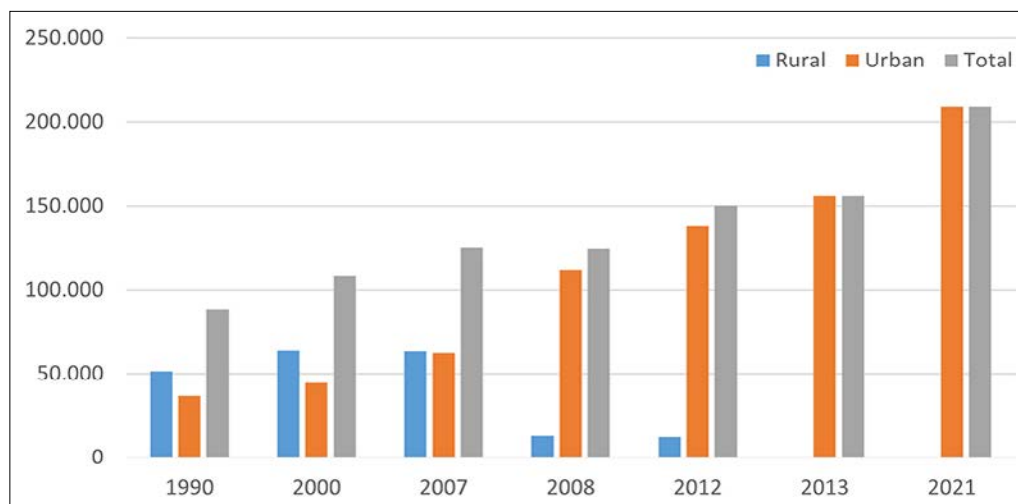


Figure 2. Silivri rural and urban population.

<https://www.tuik.gov.tr/>

character as the Marmara Sea and its coastal areas become unusable for recreational activities. Agricultural lands in the city's northern zones are increasingly infiltrated by urban functions (Istanbul Büyükşehir Belediyesi, 2021).

The Silivri municipality was established as an administrative entity in 1922. With Law No. 5747 in 2008, and Law No. 6360 in 2012, surrounding villages were transformed into neighborhoods of Silivri. As of today, there are 35 neighborhoods, some of which remain rural, within the borders of Silivri Municipality (Silivri Belediyesi, 2020). These regulations also show themselves in the district's rural and urban population change. According to the 2007 census results, Silivri's rural population had a 50.3% share of the total population. Following legislative regulations, the district's rural population

technically decreased to 10.4% in 2008 and to 8.4% in 2012. Due to these regulations, the amount of rural population in Istanbul has been declared as zero in TUIK data since 2013. In this context, the population of Silivri was announced as 155,923 in 2013 and 209,014 in 2021 (Fig. 2).

In the Istanbul Master Plan approved in 2009, Silivri was planned as the second-tier center to serve the western end of Istanbul. The Plan aims for Silivri to adopt an economic structure focused on information, communication, and technology.

Functions and institutions that will come to the fore in the district are universities, technology industrial parks, fairs, culture and congress centers. Technology is the region's most strategic new industry. One of these is the Agricultural Pro-

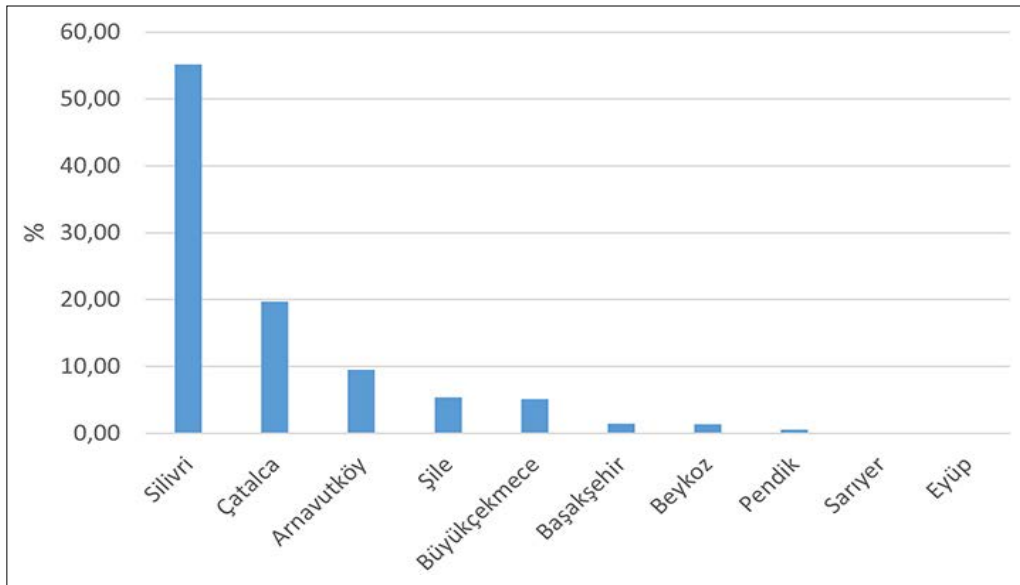


Figure 3. Shares of agricultural areas of the districts in Istanbul's agricultural areas, 2021.

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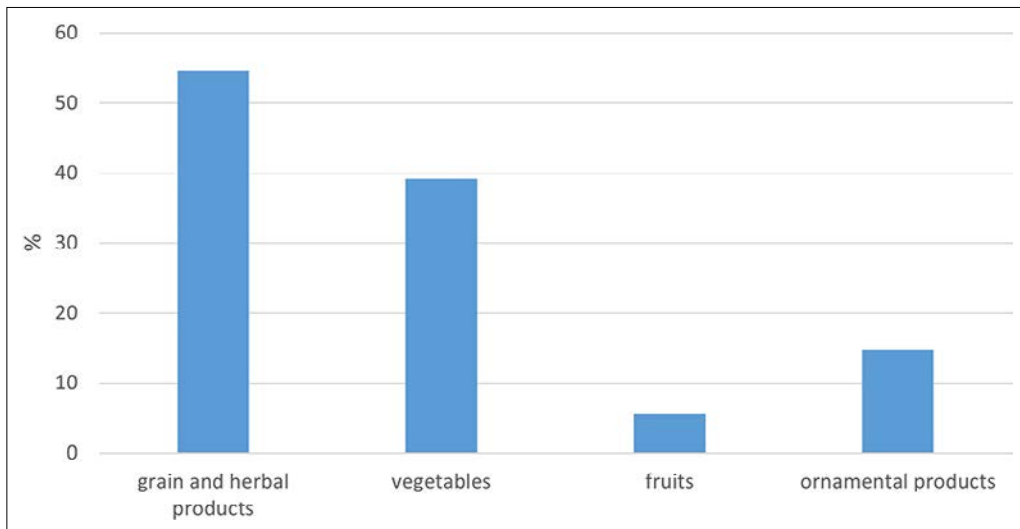


Figure 4. The ratio of products produced in Silivri to products produced in Istanbul, 2021.

<https://www.tuik.gov.tr/>

duction Technologies Development Park (APTDP), although it has not been implemented yet. The approximately 475 ha agricultural technopark is intended to increase agricultural production, to encourage agricultural investment, to raise the quality and standard of the product, to lead the establishment of modern agricultural enterprises, to realize large-scale agricultural production based on competition at national and international level, and to develop suitable, profitable technologies. APTDP is imagined as a training, experimental, and application area where agricultural research & development activities are carried out and farmers are informed of new developments (Istanbul Büyükşehir Belediyesi, 2009).

According to 2021 data, 55.21% of Istanbul's total 750,053 decare agricultural area is in Silivri (Fig. 3).

Fifty-five per cent of grain and herbal products, 39% of vegetables, 6% of fruits and 15% of ornamental plants produced in Istanbul come from Silivri. Grains are Silivri's number one product, with more limited fruit and vegetable cultivation (Fig. 4).

5.1. Silivri TURAM: Model and Operation

Silivri TURAM is a research and production center constructed by Silivri Municipality in 2010. TURAM has been operating

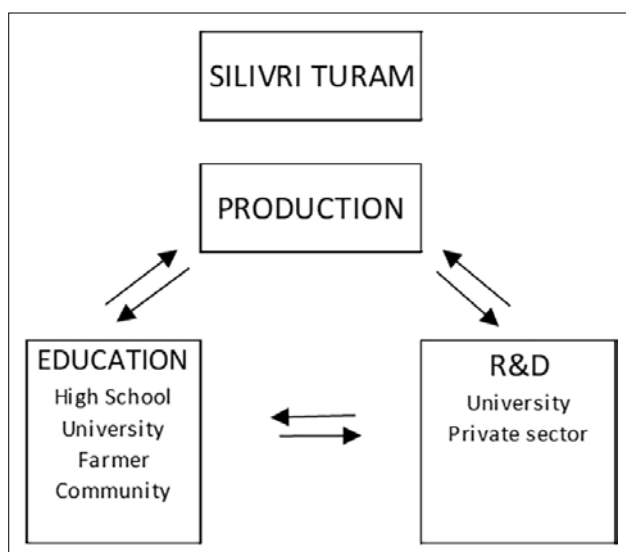


Figure 5. Silivri TURAM Model.

TURAM: Silivri Agricultural Production and Research Center.

as a center affiliated with the Agricultural Services Directorate established in Silivri Municipality since 2019.

TURAM mainly carries out production, training, and R&D activities (Fig. 5). It has a distillery, trial areas, training rooms, and production areas consisting of fields and greenhouses on its 250-decare plot. Fourteen people, including one agri-

cultural engineer, one agricultural technician, a chemist and eleven field personnel work in the center. The activities and stakeholders of TURAM are shown in Table 1.

A total of 75 kinds of medicinal and aromatic plants such as lavender, sage, and rosemary; field plants such as sunflower, corn, barley, wheat; and garden plants, such as vegetables and fruit are grown on TURAM land. Beekeeping is also carried out. Future plans anticipate olive and grape cultivation. In parallel with its production activities, TURAM provides consultancy services and production support to farmers (Table 2) (A. U., G. B., personal communication, June 24, 2022).

R&D activities are conducted in collaboration with universities and the private sector. Training sessions are provided to farmers and the public in partnership with Namık Kemal University (NKU).

TURAM also provides education in its agriculture-focused TURAM Vocational and Technical Anatolian High School. It is the first high school established by a municipality in Turkey. One of the municipality's buildings, located 4 km from the TURAM land, was converted for this purpose. Students get their practical training on the TURAM land.

5.2. Evaluation of the TURAM Model

We evaluate the TURAM model in two stages. First, TURAM is assessed as a local development model, focusing

Table 1. Activities and stakeholders of TURAM

Activities	<p>Production:</p> <ul style="list-style-type: none"> • Production: Small-scale production of horticultural crops, field crops and medicinal and aromatic plants on municipal lands, propagation of seeds and seedlings, beekeeping. • Production supports: Seedling and seed support, fertilizer support, straw support. • Public support: Free distribution of sunflower oil to low-income people. • Land leasing: Lease of municipality's agricultural lands to farmers and entrepreneurs. • Free of charge land allocation: Free land allocation for some special local products (topatan melon and okra). • Consulting: Information, guidance, technical support and land control. <p>Education:</p> <ul style="list-style-type: none"> • TURAM Vocational and Technical High School. • Cooperation with NKU (education and internship opportunities). • Seminars for farmers and public. <p>R&D:</p> <ul style="list-style-type: none"> • Experimenting with the private sector and university, R&D studies, dissemination of high value-added products, especially lavender. • Project: EU projects, thesis and other studies.
Stakeholders	Silivri Municipality, TURAM Vocational and Technical High School, NKU, Bezmialem University, private companies, NGOs, public institutions, public, students, farmers, entrepreneurs.
Finance	Municipal budget, university R&D budget, EU projects, private sector budget.

TURAM: Silivri Agricultural Production and Research Center; NKU: Namık Kemal University.

Table 2. Supports given by TURAM in 2022

Fertilizer support	40 people
Straw support	1 000 people
Barley seed support	2 000 people
Corn silage support	1 000 people
Forage peas	600 people
Sunflower oil	10 000 families (almsfolk)
Heirloom seed support (100–150 kinds)	No data

TURAM: Silivri Agricultural Production and Research Center.

on its three key aspects: innovation, participation, and sustainability. Second, the model's impacts and contributions on local development will be examined.

5.2.1. Evaluation of TURAM as a Local Development Model and Its Aspects of Participation, Innovation, and Sustainability

First of all, TURAM is a local development project. Item No. 13.4.4 of the Silivri Municipality 2010–2014 Strategic Plan aimed to implement the Local Investment Agency Project until the end of 2010, supporting projects that would create economic value and employment. Likewise, the intention was to revitalize the disappearing values of the district (Silivri Belediyesi, 2010). There was no prior example of a local investment or development agency at municipal level in Turkey and there had only been limited efforts. One of these was the Pendik Municipality's Local Development Platform (Pendik Belediyesi, 2004). But Municipality Law No. 5393 in 2005 let the municipality provide and procure services for development of economy and trade. Thus, Silivri Municipality conceived a model based on existing local and regional development agencies in Turkey and internationally (Göymen, 2004; Gönül, 2007; Tamer, 2008). The municipal council approved it in 2010. TURAM was originally designed as an exemplary project that could be implemented within the Local Investment Agency. The Agency never materialized, but TURAM was eventually realized as a local development project.

TURAM was developed in line with Silivri's local resources, potentials, and needs. Agriculture is an important sector for Silivri in terms of both existing resources and decisions given in master plans. TURAM primarily aims to use Silivri's agricultural potential in the most effective way, to increase the competitiveness of the agricultural sector and farmers, and to ensure conservation of the terrain. It endeavors to increase the diversity of agricultural products, to direct farmers to products with high added value, to facilitate farmers' access to the market, to provide employment, to carry out R&D in cooperation with relevant institutions and organizations, and to carry out production and research activities on agricultural lands owned by the Municipality. Integrating research

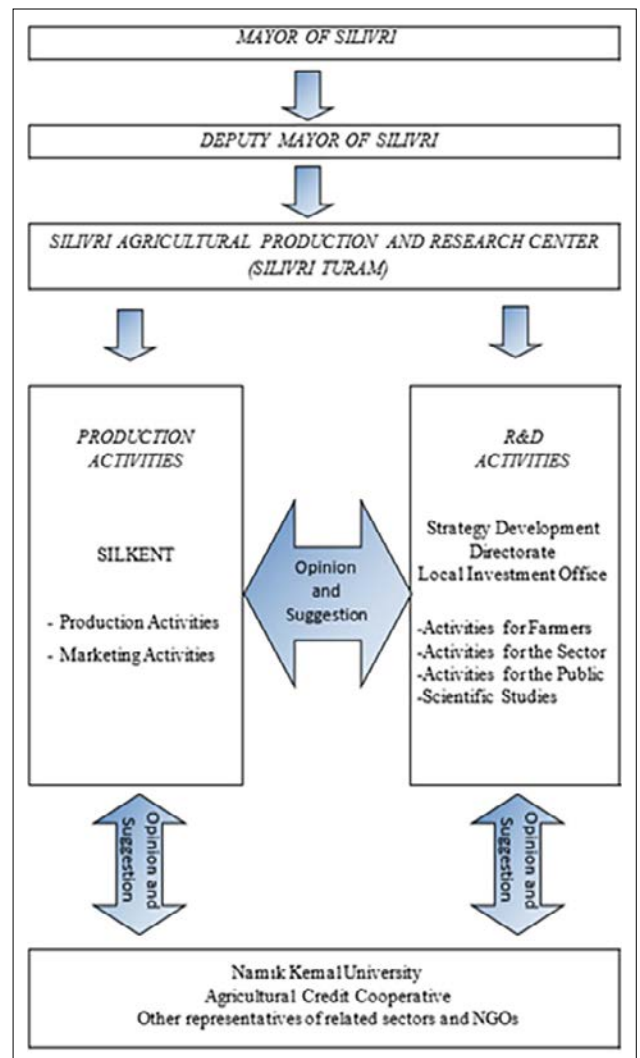


Figure 6. Operating Model of TURAM, 2010.

TURAM: Silivri Agricultural Production and Research Center.

activities is part of the center's vision to become a model for local development. The dimensions of participation, innovation, and sustainability, which are prominent in the context of local development, are here evaluated relevantly for TURAM.

5.2.1.1. Participation

TURAM is designed as a participatory model for local development. It was established as a center under administration by the Deputy Mayor of Silivri Municipality. According to the model, R&D activities were conducted in collaboration with NKU, while production was carried out through the municipality's SILKENT company on publicly owned land. This was coordinated by municipal units and involved cooperation with local stakeholders. In this framework, the initial operating model shown in Figure 6 was created for TURAM, leveraging the multi-stakeholder, participatory, collaborative working style. In 2019, it became a center in Agricultural

Services Directorate of Silivri Municipality but continued to operate through collaboration with stakeholders.

TURAM has been shaped according to the opinions of stakeholders in the region. During this process, stakeholders whose opinions were gathered through face-to-face interviews include farmers, private sector companies engaged in agricultural activities in the region, NGOs, government agencies, and academic faculties. In TURAM, the problems of the agricultural sector and how to address these issues have been identified during these consultations. For this purpose, meetings were held with stakeholders including Arıkanlı Holding, Agricultural Credit Cooperative, NKU, and the Leader Farmers Association (Önder Çiftçi Derneği-OCP). Their suggestions and experiences were shared in order to strengthen the agricultural sector and aid farmers. The main problems of the agricultural sector were stated as low product diversity, farmers' tendency to stick with traditional products, farmers' aversion to products with high added value, low education level of farmers, high rent prices for land, and insufficient subsidies given by the state. The prominent issues were increasing product diversity and producing high value-added products. In light of these interviews and research, the center devised its framework of activities.

Subsequently, the stakeholders intended to cooperate in the project were determined. Silivri Municipality signed a protocol with NKU on 25 May 2010, and with Agricultural Credit Cooperative on 14 October of the same year (Silivri'nin Haber Sitesi, 2010). Later, in 2015, the municipality also formed a partnership with Bezmialem University (Super Silivri, 2015).

5.2.1.2. Innovation

TURAM is primarily a new model based on the region's and municipality's resources, stakeholders' opinions, local potentials, dynamics, and needs. In this context, it is innovative and unique, particularly in terms of activities conducted and methods employed.

One of the most significant indicators of the center's innovation is its R&D activities. Experimental production carried out in the field and the research conducted by universities and the private sector are essential components of this model. Growing 75 kinds of medicinal and aromatic plants that are uncommon to the region is also an innovative approach for regional agriculture aimed at increasing product diversity and farmers' income.

The center was realized on public agricultural land so that the area could be used to model trial cultivation of different products as demonstration for farmers. And as stated above, this land is also used for VoTech secondary school education. Therefore, it was planned as a demonstration land for

education and production. TURAM takes its inspiration from The Field Days, Turkey's first open field applied agriculture fair held by the Leader Farmer Association in 2010.¹ While allotting the land, relatively large terrains were evaluated. For TURAM, a 250-decare parcel was chosen from publicly owned lands after conducting soil analyses. Since Silivri Municipality did not have an expert in agriculture, companies and NGOs operating in the agricultural sector assisted the municipality in conducting soil analyses on various lands to choose the most suitable one.

5.2.1.3. Sustainability

The model is designed to target the economic, social, and environmental aspects of sustainable development. These aspects and their impacts on the region will be evaluated in our next section.

The sustainability and continuity of the center are also crucial. For 14 years, the center has continued to support farmers according to changing conditions and needs. Although initially focusing more on research & development, in recent challenging economic times TURAM has prominently shifted towards providing direct support to farmers (A. U., G. B., personal communication, 24 June 2022). Another important aspect is the center's ability to maintain its presence and operations in a municipality led by mayors from different political perspectives since its establishment. This underscores the center's sustainability. In this regard, we can say that TURAM addresses a significant need in the region and has found local acceptance and support.

5.2.2. Evaluation of the Model's Impacts on Development

TURAM's activities impact the environment, economy, and society.

5.2.2.1. Economic impact

TURAM has had profound effects on agriculture, especially with regard to promoting high-value-added products in the region. In pursuit of this goal, lavender has become the most supported crop in the region. Data from 2021 show that Istanbul's lavender cultivation is concentrated in Silivri, which accounts for 72.8% of the areas where lavender is produced in Istanbul; 60.6% of the total lavender production in the city takes place in Silivri (Fig. 7). Lavender crops are clear—albeit symbolic—proof that the center has succeeded in introducing a new, targeted production.

As a result of the training and support provided by TURAM together with NKU, medicinal and aromatic plants started to be cultivated in the region. Numerous vegetable, fruit, sunflower and wheat trials were carried out. For example, a

¹ See <https://dlgfuarcilik.com>.

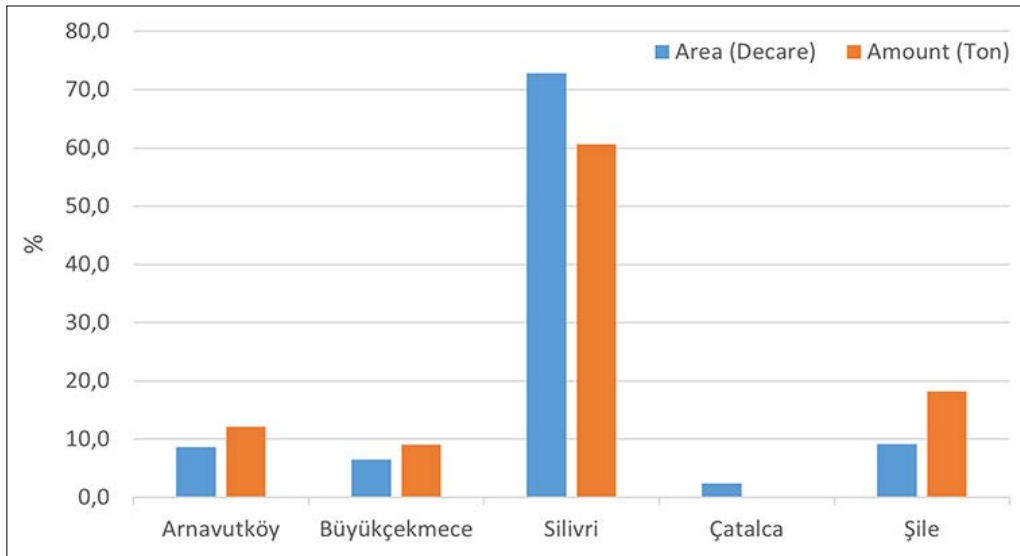


Figure 7. Distribution of lavender production by district in Istanbul, 2021.

<https://www.tuik.gov.tr/>

company tested three types of sunflowers on the land. Later, the seeds were multiplied by the municipality and distributed to farmers (İ. T., personal communication, 23 June 2022).

Within the scope of studies conducted in collaboration with the Phytotherapy Education, Practice, and Research Center of Bezmialem University and TURAM, which began in 2017 and continued for several years, dozens of plant species were cultivated for the pharmaceutical industry (Bozdoğan, 2017). This initiative has been significant not only for regional development but also for the advancement of Turkey's pharmaceutical sector.

Other economic impacts are seen in entrepreneurship and branding. Local entrepreneurs were supported, and some of those who received training in medicinal and aromatic plant cultivation started lavender production. One of them created her own brand, Silavant.² That entrepreneur started by planting lavender in her own field. During the process, TURAM guided the product selection and provided seedling support. In addition, the oils of lavender were extracted at TURAM's distillery and then sent to Silavant for use in cosmetics production. Today, besides production, Silavant also welcomes tourists to visit the property. The entrepreneur opens her field to guests, exhibits and sells products, holds activities for children—basically an expansion into agro-tourism. TURAM still provides consultancy on lavender production (S. E., personal communication, 22 July 2022). In this example, the interest of entrepreneurial women in agriculture is not only an economic success of TURAM but also a social achievement.

² See <https://www.instagram.com/silavrilavanta/>

³ See <https://www.turam.k12.tr/>

TURAM's biggest direct assistance to farmers is seed and seedling subsidy as prices increase radically (İ. E., personal communication, 22 July 2022). Because of Turkish hyper-inflation, it is crucial that TURAM supports small-scale farmers (İ. K., personal communication, 26 July 2022).

5.2.2.2. Social and cultural impact

We consider TURAM's most important impact has been in the education sector. The center is an important contributor to the education of high school and university students, farmers and others interested in agriculture.

TURAM High School is the first high school established by a municipality. The school accepted its first class in 2017 and maintains a capacity for 420 students. Both theoretical and applied agriculture are taught. It aims to provide teenagers with the necessary knowledge and skills in agriculture and food, using scientific studies and on-site examinations. Although there is a theoretical curriculum followed in the classroom, most lessons are practical, and students spend the majority of their time at TURAM.³ In addition, thanks to TURAM, students' ability to produce projects has improved. Under the Erasmus program, students had the opportunity to intern in Italy and Spain, particularly for learning how to cultivate medicinal aromatic plants (M. V., personal communication, 24 June 2022). Moreover, NKU provides supplemental training to TURAM High School students (Silivri Özel TURAM Mesleki ve Teknik Anadolu Lisesi, 2023).

Farmers are also trained, and since 2015, over 1,000 people have received certificates after completing courses organized

by NKU and Silivri Municipality. These include Medicinal and Aromatic Plant Cultivation, Beekeeping, Ornamental Plants and Vegetable Cultivation, Greenhouse - Seasonal Flower Cultivation, Organic Agriculture, Cooperatives, and Marketing (Namık Kemal Üniversitesi, 2024). The cultivation of medicinal aromatic plants is the knowledge most in demand. In 2010, at a time when medicinal and aromatic plants were not well known, TURAM was the first Turkish institution to offer training in this field (C. S., personal communication, 29 July 2022). As a result, NKU faculty teach farmers and people who want to farm.

TURAM is an important resource for researchers. Agricultural scholars have conducted studies at TURAM for their master's thesis and research (Sağlam et al., 2016; Ayanoğlu & Orta, 2017).

TURAM also received financial support from the EU. The "Women Empowerment in Agricultural Cooperatives" project was financed with 134,324 euros, and "An Innovative VET Perspective on Agriculture for Climate Change Adaptation" won 216,840 euros in funding (Silivri Belediyesi, n.d./a).

Agriculture is a strategic sector. It is necessary to popularize and even promote agriculture to the youth. This way, agriculture can be advanced in the next generation. Successful young people choosing agriculture as a profession will lead to better jobs in this strategic sector. The fact that people of different ages come to see Silivri TURAM creates an awareness about agriculture (İ. T., İ. K., personal communication). The center has been a driving force in the region's agriculture and agricultural education (M. V., İ. T., personal communication).

Stakeholders state that TURAM is a successful, exemplary, supra-political center that needs to be expanded. According to some, TURAM has filled an important niche with the consultancy and training it provides (M. V., İ. T., S. E., personal communication).

Trials and R&D activities in TURAM are crucial for their economic and social aspects, contributing to both education and production. In TURAM, local varieties specific to the region are grown to increase their performance, and there is an ongoing search for non-native varieties suitable for cultivation in the region. NKU has tested about 50 plants such as sage, thyme, mint, rosemary, and lavender at TURAM, and graduate students have made trial productions. There are various reasons why NKU conducts experiments in TURAM. On NKU land, trial areas are limited and there is no drip irrigation system. In TURAM, the infrastructure is very good, there is drip irrigation, and a variety of experimental crops grow across different locations. Having diverse crops in the field is an advantage for both TURAM and students.

⁴ See <https://bacem.com.tr/>

⁵ See <https://aydin.bel.tr/>

Another significant social impact of TURAM is that it has served as a model for other municipalities. In the years since its establishment, other municipalities such as Balıkesir Municipality BAÇEM (2014)⁴ and Aydın Municipality's Aydın Farmer Center (2019)⁵ implemented similar projects. In this context, Silivri TURAM can be said to play a pioneering role; its social influence extends beyond the district's boundaries.

5.2.2.3. Environmental impact

The primary environmental issues related to farmland include the inability to protect these vital natural resources, pressure from urban development, and misuse for non-agricultural purposes. Istanbul is among the Turkish provinces losing agricultural lands. Legal regulations alone are insufficient to protect these areas (Özgül, 2010). In this context, TURAM's activities create highly significant and positive environmental impacts. By encouraging agricultural activities and striving to expand farming, TURAM is conservationist. Furthermore, promoting agricultural production, particularly of high-value crops, supports both farmers and the economy generally. This approach ensures that agricultural lands are both protected and used for their intended purpose. Another important aspect is that farmlands belonging to the municipality are leased to farmers and entrepreneurs, thus making these terrains productive, even profitable. During the 2019–2020 period, 600 acres of land were cultivated within the framework of TURAM's operation. This was increased to a total of 2,500 acres in 2020–2021. In 2022, 3,500 acres of municipal land, located in different neighborhoods, were leased for agricultural purposes (Silivri Belediyesi, n.d./b) (A. U., G. B., personal communication, 24 June 2022). Thus, it can be considered that TURAM has contributed to the increase in this region's cultivated land. Indeed, Figure 8 shows that the amount of cultivated agricultural fields in Silivri has increased since 2010, following a stagnation in 2008.

It is remarkable that in the "Green Municipality Report Card Project" prepared by the Green Future Association as a reference for local governments aspiring to become ecological municipalities, TURAM is also described as an exemplary project in terms of urban agriculture and empowering local farmers. The association emphasizes that TURAM prioritizes cultivation of plants compatible with the region's soil (Yeşil Gelecek Derneği, 2019).

As seen, TURAM has significant environmental, social, and economic impacts. Additionally, based on interviews conducted during the research, we prepared a SWOT analysis of Silivri TURAM (Table 3). This analysis provides impor-

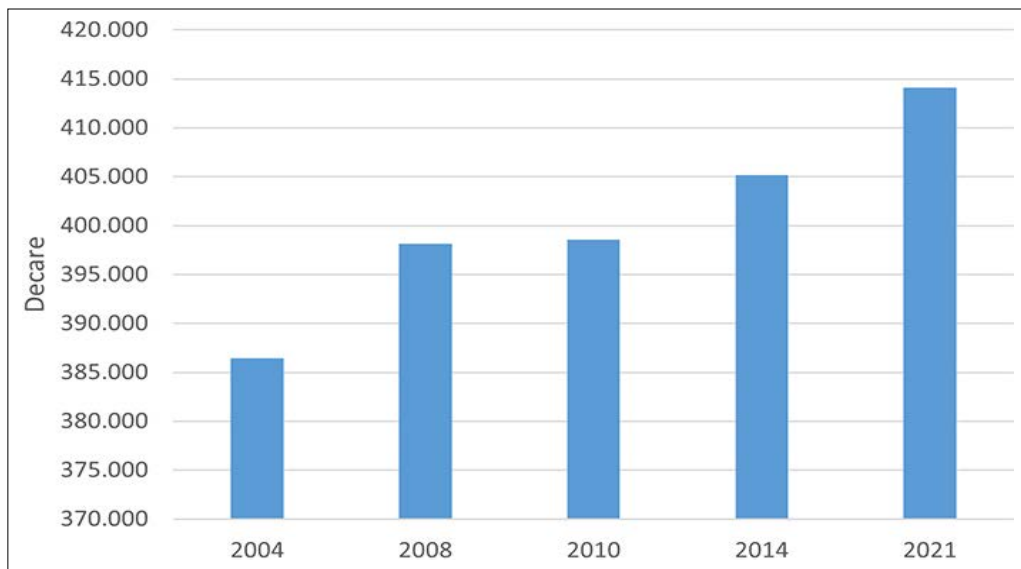


Figure 8. Cultivated agricultural fields in Silivri.

<https://www.tuik.gov.tr/>

Table 3. SWOT analysis of TURAM

TURAM's strengths	<ul style="list-style-type: none"> • Own an agricultural land • Having agricultural lands under the ownership of the municipality • Leasing of municipal lands for agriculture and bringing them into production • Providing farmers and students with the opportunity to learn on site • Collaboration with lots of stakeholders • University collaborations • Conducting R&D studies with the private sector and universities • 14 years of experience
TURAM's weaknesses	<ul style="list-style-type: none"> • Failure to carry out the activities within the framework of a comprehensive plan-program • Lack of measurable and traceable targets for the activities • Failure to record, monitor, measure and evaluate the activities
Opportunities of the agriculture sector, Silivri, and TURAM	<ul style="list-style-type: none"> • Increasing importance of food security, access to healthy and cheap food, and agricultural sector • Silivri being an important agricultural production area in Istanbul • Extensive agricultural activities in the region • Istanbul being an important market with its large population • Medicinal and aromatic plants potential of the region • Unique types and branding potentials of the region
Threats of the agriculture sector, Silivri, and TURAM	<ul style="list-style-type: none"> • Climate change • Reduction in water resources • Pressure of construction activities on agricultural lands • Shrinkage of agricultural lands • Increase in input prices in agriculture • Market shortage for products • Lack of production planning in agriculture • Insufficient cooperatives activities in the region

SWOT: Strengths, Weaknesses, Opportunities, Threats; TURAM: Silivri Agricultural Production and Research Center.

tant insights into the institution's impact. In addition to its current activities, stakeholders have made suggestions for enhancing TURAM's influence. Studies on access to market, branding and geographical indication should be improved. The evaluation of organic waste and compost can be counted among other studies. Moreover, TURAM has gained significant experience as an educator for high school, university, farmers, and society more broadly. It can use this expertise to develop innovative studies and pedagogical methods (C. S., İ. K., S. Ö., personal communication). On the other hand, the weakest aspect of TURAM's efforts is its inadequacy in promoting cooperatives (İ. T., İ. E., İ. K., S. Ö., personal communication).

6. Conclusion

Since the 1980s, the understanding of local development has changed globally, with the perspective of economic development broadening to include social concerns. Concepts such as participation, innovation, and sustainability have come to the forefront, and the role of local governments in fostering development has increased. On the other hand, because of legislative changes made in the 2000s in Turkey, many villages were relocated within metropolitan borders, and these neighborhoods became subject to urban municipal administrations. Thus, agricultural activities and projects are new responsibilities of municipalities previously only concerned with urban affairs. In parallel with these changes, Silivri Municipality initiated an institution to support local development in 2010: TURAM.

Using the example of Silivri TURAM, we posit that municipalities can create participatory, innovative, and sustainable programs for local development. To this end, the TURAM model has been examined and evaluated with regard to how it utilizes the region's resources and provides for the needs of various actors. Shaped and implemented through stakeholder participation, TURAM is participatory in its operational approach as well. The use of public land as an area for education, production, and R&D under municipal leadership and in collaboration with universities; the provision of practical training for all segments of society by using TURAM facilities as a demonstration area; and the establishment of a high school providing education in agriculture are among the innovative methods and approaches pioneered in Silivri TURAM. Another key aspect is sustainability. TURAM supports production activities as well as R&D conducted by the private sector and universities. It also aims to protect and utilize farmland, conserving those terrains for their intended purpose. Thus, Silivri TURAM engages in activities that address the economic, social, and environmental dimensions of sustainable development. This institution has become an effective, innovative local development model through its economic, social, and environmental impacts. In the eco-

omic aspect, particularly, the production of high value-added products has been encouraged in the region. Lavender, for instance, has been widely cultivated. In the social facet, many young people have been educated through high school classes and practical training. Another important economic and social aspect of TURAM is that it collaborates with agriculture and pharmacy academic faculties to conduct studies helpful for the food industry and the high-value-added pharmaceutical industry. NKU has conducted important academic research projects in cooperation with Silivri TURAM. Furthermore, studies conducted on pharmaceutical raw materials in 2017 in partnership with Bezmialem University are quite remarkable. These kinds of projects can potentially contribute to the development of not only Silivri but also Turkey. TURAM's influence has extended beyond the region, making it a model for other municipalities. Some, like the Balıkesir and Aydin municipalities, have established similar centers. In the environmental aspect, TURAM encourages the use of farmland for its intended purpose by supporting the agricultural sector in various ways such as promoting high-value-added products and providing subsidies. Municipal land is also made available for agriculture under TURAM's auspices; 3,500 acres of municipal land were leased for agricultural purposes in 2022, up from 600 acres in 2019. This finding is very important when we consider that farmlands in Silivri are faced with the encroachment of urban functions as mentioned in section 5.1. Given these findings, it is highly important for TURAM's production, R&D, and educational activities to be further developed and continued, not only for Silivri and Istanbul but for the country as a whole.

It should finally be emphasized that Silivri Municipality managed to implement TURAM by effectively utilizing limited resources, including physical capital such as land and buildings, as well as social capital such as collaboration and networks. For future research, it is worth investigating the effects of social capital on the development and success of the Silivri TURAM model.

Notes

Silivri TURAM is a model developed by the author and the Strategy Development Department during her tenure as Strategy Development Manager at Silivri Municipality. This model was created in line with former Silivri Mayor Özcan Işıklar's vision and is based on scientific research and stakeholder perspectives.

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Appendix I. Interview questions

a) Turam operations

1. What units are included within TURAM?
 2. How many people work at TURAM? What are their educational backgrounds and professions?
 3. What activities are carried out at TURAM? Could you explain the details?
 4. Who participates in these activities?
 5. Who benefits from these activities?
 6. How is the financing of these activities managed?
 7. Who organizes and manages the processes and organization of these activities?
-

b) Evaluation of Turam

8. What are the outputs and products of TURAM? (Production, education, R&D, innovation, job and employment creation, etc.)
 9. Which activities do you participate in at TURAM? Could you explain the details?
 10. What benefits do you receive from TURAM? What services and assistance do you get from TURAM?
 11. How do you contribute to TURAM?
 12. What is TURAM 's contribution to farmers and agriculture?
 13. What is TURAM 's contribution to universities?
 14. What is TURAM's contribution to high schools?
 15. What is TURAM's contribution to the education of various segments of society, including adults?
 16. What is TURAM's contribution to the community and the public?
 17. What is TURAM's contribution to the municipality?
 18. What is TURAM's contribution to Silivri and Istanbul?
 19. Are you satisfied with the work of TURAM?
 20. What are your criticisms of TURAM?
 21. What are your expectations and suggestions regarding TURAM?
-

c) The future of Turam

22. How do you evaluate the future of TURAM?
 23. What potential does TURAM have? What can be done to utilize this potential?
 24. What risks does TURAM face? How can these risks be mitigated?
 25. What plans and goals do you have for TURAM? What needs to be done to achieve these goals?
-

TURAM: Silivri Agricultural Production and Research Center.