



## A CRITICAL REVIEW ON CONSERVATION OF RURAL ARCHITECTURE AND LIFE IN TURKEY: VISIONS, TOOLS, AND ORGANIZATIONS

Türkiye’de Kırsal Mimarlığın ve Yaşamın Korunması Üzerine Kritik Bir İnceleme: Vizyonlar, Araçlar ve Kuruluşlar

**Vacide Betül KURTULUŞ\***  
**Neriman ŞAHİN GÜÇHAN\***

### ABSTRACT

Once a vibrant fabric of life, rural Turkey is facing a significant problem with population loss today. With changes in policies and the declining attractiveness of rural areas, rural architecture and lifestyles are in danger of disappearing. This study explores the complexities of this crisis, going beyond the mere preservation of buildings. It analyzes agricultural, legal, and administrative policies that trigger migration from rural areas and examines international frameworks. Beyond preserving buildings, the study delves into the initiatives, responses, and values that are critical to the revitalization of rural life. The study assesses movements that have been initiated to empower local communities and sustain rural lifestyles, recognizing that the sustainability of rural life is dependent on a thriving community. In conclusion, safeguarding Turkey’s rural heritage requires a transformative approach. By prioritizing local participation, fostering interconnected solutions, and addressing the existing limitations, a future of thriving rural communities and their cultural heritage becomes possible.

**Keywords:** rural transformation, conservation of rural areas, rural policies, rural development practices, rural areas in Turkey.

### ÖZ

Bir zamanlar canlı bir yaşamın dokusunu oluşturan kırsal Türkiye, bugün önemli bir sorun olan nüfus kaybı ile karşı karşıyadır. Politikalardaki değişimler ve kırsalın azalan çekiciliği ile kırsal mimari ve yaşam tarzı yok olma tehlikesindedir. Bu çalışmada bu krizin karmaşıklıkları, yalnızca yapıların korunmasının ötesine geçerek araştırılmıştır. Köyden göçü tetikleyen tarım, hukuki ve idari politikaları analiz edilmiş ve uluslararası çerçeveler incelenmiştir. Yapıları korumak dışında, kırsal yaşamın yeni-

\* Asst. Prof. Dr., Abdullah Gül University, Faculty of Architecture, Department of Architecture, Kayseri/Türkiye. E-mail: vacidebet@gmail.com. ORCID: 0000-0001-9768-6982.

\* Prof. Dr., Middle East Technical University, Faculty of Architecture, Department of Architecture Ankara/Türkiye. E-mail: neriman@metu.edu.tr. ORCID: 0000-0001-7841-9344.

den canlandırılması için kritik öneme sahip girişimler, tepkiler ve değerler detaylı bir şekilde incelenmiştir. Kırsal yaşamın korunmasının, gelişen bir topluluğa bağlı olduğunu kabul eden çalışmada, yerel halkı güçlendiren ve kırsal yaşam tarzını sürdürmek amacıyla başlatılan hareketler değerlendirilmiştir. Türkiye'nin kırsal mirasının korunması, dönüştürücü bir yaklaşım gerektirmektedir. Yerel katılımı önceliklendirerek, birbirine bağlı çözümleri teşvik ederek ve mevcut sınırlamaları ele alarak, gelişen kırsal toplulukların ve onların kültürel mirasının geleceği mümkün hale gelir.

**Anahtar Sözcükler:** kırsal dönüşüm, kırsal alanların korunması, kırsal politikalar, kırsal kalkınma uygulamaları, Türkiye'de kırsal alanlar.

## **Introduction**

Rural areas, born from the dynamic interaction of people and the environment, reveal the unique character of a society through the lens of both physical space and everyday life. The starting point of this study focuses on rural architecture which is composed of local materials and traditional techniques. It embodies the personal, social, and economic needs of a community, seamlessly integrated with rural production. Rural architecture and life interweave, reflecting the distinctiveness of a culture and the very identity of a place. Since the 1950s, Turkish rural areas have witnessed a dramatic decline in population, largely driven by specific policy choices. With the waning appeal of rural living, the rich tapestry of rural architecture and traditional ways of life faces imminent extinction. The very continuity of rural existence hangs in the balance. In this critical context, safeguarding rural architecture becomes paramount for ensuring the sustainability and local distinctiveness of these places. However, protecting buildings alone is insufficient. Rural architecture thrives on a vibrant rural life. Without active communities using and tending to these structures, they risk decay and abandonment. Therefore, understanding the challenges facing rural areas is crucial before implementing conservation strategies.

### **1. Problem Definition: Reasons of Rural Depopulation in Turkey**

Before discussing the concepts, tools and action developed preventing destruction of rural areas, the breakpoint changes which are affected transformation of the rural areas in agricultural, legislative, and administrative policies are introduced. The effects of these policies to rural areas will be discussed with a critical approach. Secondly, the selected cases characterizing different types of concepts, tools and actions initiated in Turkey will be discussed from a critical point of view with a consideration of sustainability.

### **1.1. Administrative Policies**

The understanding of rural development changes with the breakpoints of administrative policies in 1950, 1960 and 2000s. Before 1950s, land reform was used as a base tool for administration of rural areas. The agricultural reform which is a holistic approach aiming both public & social services and physical infrastructure was embraced after 1950s. In 1960s, five-year development plans started to be created including the strategies for rural development (Sinan, 2012; Kayıkçı, 2009: 49-51; See Figure 1). The development of agriculture was considered equal to the rural development, and it was advocated that industrial society can be achieved by the contribution of peasants.

1980s rural development loose attractiveness that the state removes the agricultural supports. The priority was given to investment for urbanization from 1980 to 2000 (Altın, 2003: 10). Rural development approach in 2000s is formed by the policies of EU because of EU harmonization process. Since, this process requires a civil organization and a substructure which Turkey doesn't have. Moreover, this new set of policies is significantly different comparing the policies of 1960s that there is an inconsistency with the existing framework in Turkey. Therefore, Turkey is having a hard time to adapt these enforcements (Kayıkçı, 2009: 196-213; Günaydın, 2010). After these changes, the local people in rural areas began to experience economic difficulties, as it became more difficult to produce with traditional methods and the government reduced its support to producers. Villagers who could not adapt to these changes migrated to the city where they could find alternative sources of livelihood.

In Turkey, while certain groups and individuals recognize the architectural, social, and economic values of rural areas, existing legislation for cultural and natural heritage conservation lacks specific regulations for rural heritage. Rural sites lack special status or specific designations, and the relevant law treats them equally with urban sites or combines them with archaeological sites (Kültür ve Tabiat Varlıkları Koruma Kanunu, 1983).

### **1.2. Agricultural Policies**

Majority of the population in Turkey used to make a living from agriculture. Today, this fact is changed because of population flows from rural to urban. The flow started in 18th century and increase especially after WWI (1914-18) and Turkish Independence War. The reasons of flows are denoted as wars with their political, economic, and ethical effect as well as inequi-

table land distribution inherited from Ottoman Period (Köymen, 1998; See Figure 2).

The Economic Congress and the 1929 Great Depression further shaped early Republican agricultural policies. The global depression led to a worldwide shift towards state-led policies, increased state intervention, and a strengthening of movements from agriculture to industry (Şener, 2004: 74). Falling agricultural prices and rising gasoline prices further compounded Turkey's difficulties, rendering large-scale production unprofitable and leaving agricultural lands empty (Ezer, 2010: 437). Significantly, the rural population in Turkey dramatically decreased between 1927 and 2022 (See Table 1). While this rural-to-urban migration has been ongoing, specific periods witnessed sharp declines, particularly in the 1950s after the Marshall Plan and the 1980s with the government's shifting attitude towards rural areas (Köymen, 1998).

The year 1950 reflects the unemployed tenants due to the complications of the adaptation period to the rules of the "modernization project" within the framework of the Marshall Plan with the effect of USA and World Bank Politics (Kayıkçı, 2009: 52; See Figure 1). In addition, agricultural credit opportunities were provided through the Agricultural Bank to ensure that small farmers had access to agricultural machinery. A study conducted on people who owned agricultural machinery in 1952 revealed that 93% of people who owned agricultural machinery obtained 60% of their spending on machinery purchases through credit (Oktar & Varlı, 2010: 13). Between 1950 and 1960, production increased thanks to mechanization assistance (Kanca, 2012: 54).

1980s, on the other hand, reflected a shift in the government's attitude from "protective" to "regulatory" with the January 24 Decisions and the 12 September Regime. The Agricultural Price Supports system, which determined product prices and guaranteed purchase by a designated entity, was discontinued. This new policy effectively placed farmers at the mercy of the free market. In this environment, small farmers lost their competitive edge, and their poverty deepened (Günaydın, 2008; Kazgan, 1999: 33-34).

The 2000s saw a refocusing of agricultural subsidies. Direct Income Support, which targeted landowners rather than cultivators, was introduced. Additionally, the 2006 Seed Growing Law, mandated by the EU, was adopted by the Turkish Grand National Assembly. This law outlined the principles for the withdrawal of government corporations (TAGEM and

TİGEM) from the seed sector, effectively privatizing it. Furthermore, the mandatory use of certified seeds, largely produced by multinational corporations, further disadvantaged small farmers (Günaydın, 2008).

The National Agriculture Project, which was started in 2017, aims to guarantee sustainable agricultural production and food security, increase the welfare level of farmers, gain a greater place in the global competitive environment, and leave a country that is more livable for future generations. The National Agriculture Project is divided into two main categories: the Model of Supporting Domestic Production in Livestock and the Model of Basin-Based Support. The Agricultural Basin-Based Support Model is a model that is being implemented in Turkey, which has a very rich climate diversity, with the aim of prioritizing the support of products that are economically most advantageous or at least the least disadvantaged in a region, considering the principle of inter-regional comparative advantage. This model is particularly important for the evaluation of the production potential of regions (Tan et al., 2015; Yüceer et al., 2020)

### **1.3. Legislative Policies**

In the early years of the Republic, villages enjoyed relative protection under the government's safeguarding policies. However, this has shifted in recent times, with rural areas increasingly becoming targets for capital investment and subject to various interventions through new regulations and legislative changes.

The first dedicated law on villages, the 1924 Village Act (Köy Kanunu, No. 442), defines a village as "a community residing in collective or dispersed settlements, characterized by communal property such as mosques, schools, pastures, vineyards, gardens, and farms." This definition reflects an integrated understanding of villages, emphasizing their community life and inextricable link with their physical environment. In 1984, the Act No. 3202 established the General Directorate of Rural Services within the Ministry of Agriculture and Rural Affairs. This centralized unit took responsibility for ensuring continued agricultural production in rural areas and addressing village infrastructure challenges (Köye Yönelik Hizmetler Hakkında Kanun, 1985). The 1998 Pasture Act (Mera Kanunu, No. 4342) aimed to define pasture areas and establish regulations for their sustainable use, including productivity improvement and maintenance. Importantly, the Act mandates the allocation of demarcated and certified pastures to

municipalities or village communities, thus providing legal protections for these vital communal resources.

The year 2005 marked a significant shift in the governance of rural areas. The General Directorate of Rural Services was abolished by Act No. 5286, and Special Provincial Administrations were established through Act No. 5302. Furthermore, the responsibility for cultural and natural heritage conservation, previously under Act No. 2863 (1983), was transferred to the Special Provincial Administrations by Act No. 5226 (See Figure 3). This frequent reshuffling of authority, driven by various governments' decisions, has significantly hampered the transformation of rural areas. The following laws have contributed to this negative impact in several ways:

Act No. 648 (2011), amending the Development Act (No. 3194, 1985), allows for the certification of pastures, plateaus, and winter quarters in the name of the Treasury Secretary and their assignment to Municipalities or Special Provincial Administrations. This opens the door for privatization and potential development on these previously protected lands. Act No. 6360 (2012) on Municipalities drastically altered the landscape of rural areas. Villages under the jurisdiction of either the General Directorate of Rural Services (1984-2005) or Special Provincial Administrations (2005-2012) were incorporated into enlarged municipalities, effectively abolishing their legal status, and transforming them into neighborhoods. This led to the neutralization of provincial special administrations and centralized control under municipalities.

The same act also imposes new taxes on former villagers, putting them on par with city dwellers. Additionally, it allows for unrestricted construction in these newly designated neighborhoods, further jeopardizing open spaces and agricultural land.

Act No. 6306 (2012) on Disaster-Prone Areas Conversion grants municipalities, with the Finance Ministry's approval, the authority to designate areas for redevelopment, potentially overriding existing land-use regulations. This raises concerns about the potential loss of valuable agricultural land, forests, and cultural heritage sites under the guise of disaster preparedness. Act No. 422 on Amendments to the Forest Law and Certain Laws, which was published in the Official Gazette on March 23, 2023, made several changes to the Agricultural Law No. 5488, which was adopted in 2006. One of these changes is to make it mandatory for farmers to obtain permission from the Ministry of Agriculture and Forestry before they can produce.

This change was made to ensure that agricultural production is carried out in a planned and controlled manner.

Another important change relates to contract farming. The 13th article of the law was amended to promote the contribution of contract farming to agricultural production planning. This amendment mandates insurance for products or production assets produced under contract farming agreements (URL-7).

As a result of these legislative changes, most villages in Turkey have lost their distinct status, and agricultural production is increasingly threatened. Uncontrolled development encroaches on open spaces, and new tax burdens on rural residents further exacerbate the challenges. These recent regulations paint a bleak picture for the future of rural communities in Turkey.

It is expected that recent changes will have a positive impact on agricultural production and food security. However, it is still too early to fully understand the effects of these two new changes, particularly their implementation in practice. Yıldırım's (URL-7) point about the unintended negative consequences of the seed law serves as a cautionary reminder that the long-term effects of new policies may not always align with initial expectations. Therefore, careful monitoring and evaluation will be crucial in determining the true impact of these recent changes on the agricultural sector.

Turkey's path towards EU harmonization has had unintended consequences for rural life. Inequitable land distribution and agricultural policies have eroded the viability of small-scale farming, pushing peasants towards alternative income sources. Villages, now absorbed into metropolitan municipalities, face the loss of their character and traditional production spaces due to unrestrained development. This lack of focus on rural needs, coupled with inadequate and unsustainable development efforts, threatens the very fabric of rural communities and their unique cultural heritage.

The depopulation of rural areas not only disrupts traditional ways of life but also erases irreplaceable local knowledge crucial for sustainable rural development. The current legal framework in Turkey lacks specific protections for rural sites and architecture, further jeopardizing their preservation. Without a shift towards sustainable and culturally sensitive approaches, the continuity of rural life and its unique identity is at great risk.

## **2. Aim and Scope**

The research begins by questioning how to conserve rural architecture in a sustainable way. After a process of study, it becomes clear that continuous rural life is essential for the preservation of rural architecture. Therefore, addressing the issues related to its continuity is necessary. In this context, the impact of certain policies on the discontinuity of rural life and depopulation in rural areas of Turkey is discussed previously. Due to this ongoing decline, both rural life and consequently rural architecture are under threat. Numerous initiatives have been launched to prevent their disappearance, which can be categorized into two groups: those undertaken by the government and those by independent actors. This study will specifically investigate projects spearheaded by volunteers and private individuals. The purpose of the study is to research projects that have been initiated to revitalize rural life for the sustainable protection of rural architecture, and to draw lessons from these examples for the broader protection of rural communities. The study explores the subject through carefully chosen projects, identified by reviewing existing literature and seeking cases with diverse characteristics to capture the range of potential initiatives.

## **3. Methodology**

To build a structure for the research, all the international charters and recommendations about the subject in history were analyzed and a few key subjects were determined according to the commonly highlighted topics. Although, the highlights of the discussion's changes through time, the integrity of the rural architectural heritage with its surrounding and rural life considered in every recommendation.

One of the first documents to declare the danger of the disappearance of rural architecture and its environment is the Granada Appeal Declaration signed by the Council of Europe, published in the Rural Architecture in Regional Planning Symposium (1977). In the same document, it is mentioned that all possible ways to protect and use the rural architectural heritage of our continent, which is closely related to its human-made environment, should be investigated.

The title of the declaration was produced against the danger of the disappearance of the concept of rural architecture, and it mentioned that the reason for this is on the one hand industrialized agricultural development that includes large land consolidations but no longer conforms to

traditional structures, and on the other hand, partial or general migration from areas where farming is no longer profitable.

Therefore, one of the most important reasons for the disappearance of rural architecture can be considered as farmers who migrate to urban areas due to industrialized agriculture. In this case, it can be said that the protection of rural architecture is related to the protection of rural life.

Early calls for protecting rural heritage, like the 1979 Recommendation on Rural Architectural Heritage and the Cork Declaration (1996), highlighted its vulnerability due to social and agricultural changes. They advocated for safeguarding collective memory through holistic approaches that protect not just the buildings, but also their surrounding landscapes, agricultural lands, and traditional settlements, emphasizing the crucial harmony between built environment and nature.

The Valetta Principles (2011) warn of tourism's potential to disrupt rural communities. They urge tailored action plans that prioritize existing livelihoods by treating tourism as a supplementary income source. Overemphasizing tourism can transform historic areas into "tourist bubbles" unsuitable for everyday life. Therefore, rural tourism should support, not stifle, sustainable local practices. Later, the Florence Declaration (2012) broadened the scope, recognizing landscapes as dynamic expressions of human-environment relationships and vital for education, cultural awareness, and fostering a sense of responsibility towards their conservation. This historical perspective underscores the importance of protecting rural heritage not just for its cultural value, but also for its contribution to sustainable development and harmonious life conditions.

Following consensus on landscape principles, ICOMOS and IFLA launched a global initiative in 2013 to conserve and manage rural landscapes. Their goals: define the concept, promote international collaboration, encourage research on management, and raise awareness among communities and stakeholders (ICOMOS/IFLA, 2013). Additionally, ICOMOS' 2014 General Assembly focused on "rural areas within landscapes as cultural habitat," emphasizing methodologies for assessment and rural landscape's economic value (ICOMOS, 2014). As the most recent one, ICOMOS and IFLA issued a set of principles in "Concerning Rural Landscapes as Heritage." These principles emphasize understanding rural areas through the interaction of humans and nature, encompassing production activities and cultural traditions (ICOMOS, 2017). So, it is possible to say that; a key factor

to protect the rural life is production. Each rural area has its individual products considering the availabilities of the geography and the knowledge of the local people. The first key subject is the production which should continue for a continuous rural life.

The document advocates for equitable governance, meaning local populations, stakeholders, and both rural and urban inhabitants should be included and empowered in managing and monitoring rural landscapes. Shared responsibility fosters a sense of ownership and promotes sustainable practices (See Figure 4). Supporting proactive and bottom-up initiatives is another key principle. When local communities take the lead in conservation efforts, it ensures their priorities and knowledge are central to the process. This bottom-up approach leads to more effective and context-specific solutions. Active community involvement also facilitates the preservation of traditional construction techniques, materials, and spatial arrangements. These unique features, deeply intertwined with local lifestyles, are vital elements of rural architectural heritage. Understanding and respecting these traditional aspects is essential for authentic conservation.

These international charters consistently advocate for a holistic approach to rural area sustainability, including the preservation of both rural life and architecture. Furthermore, they highlight several key issues: maintaining and adapting traditional production activities, involving the local community in decision-making, leveraging tourism as a sustainable development tool, and adopting a bottom-up approach with inclusive stakeholder participation. This study delves into successful initiatives working to preserve rural architecture or the rural life. These initiatives are selected and mentioned to understand the different types of rural conservation attempts.

Given the challenges in initiating and maintaining the study through volunteer or individual efforts, it's important to understand the background and motivations of the project's founder. Who initiated the project, and what is their background? What motivated them to undertake this challenging endeavor? Did the initiator utilize any loans or financial support during the project's launch? If so, what specific forms of support did they receive?

Moreover, the study evaluates the initiatives based on whether they arose from the community itself (bottom-up) or from external forces (top-down). It then analyzes them through crucial questions: Did these initiatives

prioritize sustainable production and economic activities that respect the land and traditions? Did they involve and empower residents as central actors in their own future? Can tourism serve as a tool for creating an alternative income source for local people without disrupting rural life? By scrutinizing the initiator, funding source, and community involvement in each case, the study sheds light on the critical factors for successful rural conservation (See Figure 5).

To gather rich and comprehensive data, the study employed a two-pronged approach: a thorough literature reviews to tap into existing research, and in-depth interviews conducted both face-to-face and over the phone, ensuring a wider range of voices were heard. This survey takes place against the backdrop of shifting policies that can threaten the continuity of rural areas. However, within these challenges, dedicated advocates have mobilized diverse non-governmental initiatives to promote sustainability. These efforts broadly fall into two categories: those focused on preserving the architectural heritage and those geared towards sustaining the way of life that gives rural communities their unique character.

#### **4. Initiatives for Conservation of Rural Life and Architecture in Turkey (NGO and Community Driven Efforts)**

Amidst changing policies that threaten the continuity of rural areas, advocates have mobilized various non-governmental initiatives to promote sustainability. These efforts can be broadly categorized into those focused on preserving rural architecture and those geared towards sustaining rural life. This paper delves deeper into this spectrum, presenting two specific architectural initiatives and nine actions for rural life sustainability as detailed case studies and offering valuable insights for future endeavors. First, initiatives for rural architecture will be analyzed.

##### **4.1. Initiatives for Sustainability through Rural Architecture**

Rural architecture is valuable considering that it represents lifestyle of the indigenous people, who is living in that geography. It is also representing these available materials, and architectural features designed for the specific climate, and a document for traditional construction techniques. While rural architecture serves as a document for understanding traditional lifestyle and technologies, adapting it to contemporary conditions is necessary. Therefore, both efforts for continuing its environment friendly characteristics with technological techniques and transferring the knowledge of the traditional construction technique can be seen. In this study, two cases

will be discussed the first case (Building Biology and Ecology Institute) is using technological techniques and the other one (Natural Building Network) is transferring traditional knowledge.

#### **4.1.1. Building Biology and Ecology Institute (BBEI)**

Yapı Biyolojisi ve Ekolojisi Enstitüsü: Building Biology and Ecology Institute (BBEI), by interior architect, And Akman. BBEI focuses on developing techniques and raising awareness about natural materials in architecture, advocating for their contemporary applications. (YBE, n.d.; A. Akman, in-depth interview, August 2, 2017). It is established in 1992. This initiative is based on an institute established in Germany. The initiator was a participant of that institute and founded BBEI to promote the contemporary use of natural materials in Turkey. This exemplifies bottom-up approach since initiated by an individual and inspired a group of people. The institute organizes workshops for the young people interested in using natural materials. These workshops cater to young people, particularly architecture students, who will shape the future of sustainable building practices (YBE, n.d.; A. Akman, in-depth interview, August 2, 2017).

#### **4.1.2. Natural Building Network of Turkey**

Ekolojik Mimari & Doğal Yapı Ağı Doğal Yapı Atölyeleri: Another notable effort is the Natural Building Network of Turkey, founded in 2011 by Filiz Teltek in collaboration with Penny Livingston-Stark and Janell Kapoor. Their primary objective is to promote ecological architecture, particularly mud-brick construction, on a global scale. Moreover, her interests are discovering new ways of collaboration and expose the common sense and the creative potential of collective processes. They achieve this through workshops, seminars, meetings, and collaborative ateliers (M. Tekin<sup>1</sup>, in-depth interview, November 2017; URL-9). This initiative can be counted as a bottom-up approach. It inspired so many people, including inexperienced and professional builders. Their aim is to increase awareness on building construction with natural materials.

### **4.2. Initiatives for Sustainability through Rural Life**

As previously discussed, the preservation of rural architecture hinges on the continuation of rural life. For continued rural life, production must

---

<sup>1</sup> An in-depth interview was held with architect Merve Tekin as an active member on 20<sup>th</sup> November 2017 about the story of Natural Building Network in Turkey. The author would like to express her gratitude for her contribution.

remain viable. However, industrialization has marginalized traditional methods in favor of faster, higher-volume industrial processes. While these methods boast extended shelf life, their reliance on chemicals often results in unhealthy foods and diseases. Therefore, initiatives promoting natural food production using traditional methods can be seen as a reaction against this trend. Another challenge is the difficulty local people face in sustaining production within the free market, driven by the aforementioned policies and their outcomes. This often leads to rural-to-urban migration. Consequently, initiatives promoting community-based production revival emerge as another crucial response. This study examines initiatives driven by both motives, analyzing the successes and challenges of nine specific cases.

#### **4.2.1. Buğday Movement**

Buğday is pioneering natural food production with local seeds since 1990, Buğday, led by Victor Ananias, supports existing initiatives, disseminates information, and advocates for “natural, traditional, and ecologically certified” production. Opposing GMOs, they promote sustainable agricultural practices through their TaTuTa project, which encourages agricultural tourism in collaboration with the UN Development Program (URL-1). This initiative aims to achieve continuous agricultural production by encouraging local people to use native seeds. It follows a bottom-up approach, meaning it was started by an individual and has inspired local communities to participate. The TaTuTa (Tarım, Turizm, Takas) project serves as a prime example of responsible tourism due to its volunteer-based system. This system involves both producer volunteers who manage the farms and consumer participants who actively harvest their own food.

#### **4.2.2. İpek Hanım Farm**

İpek Hanım Farm is established in 1997 by Pınar Kaftancıoğlu, this independent farm showcases the viability of organic farming without state support. Initially supplying healthy food for her daughter, the farm now sells nationwide, eliminating middlemen and fostering direct producer-consumer communication (Kaftancıoğlu<sup>2</sup>, in-depth interview, March 21, 2016; URL-11). While providing alternative income and jobs, its reliance on a single enterprise for community sustainability merits further consideration (See Figure 6).

---

<sup>2</sup> An in-depth interview was held with the initiator of İpek Hanım Farm Pınar Kaftancıoğlu on 21 March 2016 about foundation and management system of the farm.

This model aims to ensure the continuity of agricultural production by collaborating with local communities and drawing upon their valuable knowledge. It aspires to become a recognized brand, establishing a well-organized system from order placement to food packaging. However, it operates as a private enterprise, and the local people involved contribute as employees. This aspect raises questions about the long-term sustainability of the project. Exploring alternative ownership structures or profit-sharing mechanisms could potentially enhance the project's long-term sustainability and community impact.

#### **4.2.3. Nebyan Dođal**

Established in July 2014 by siblings İbrahim Uyanık and Nazlı Uyanık Yıldız, Nebyan Dođal is a family business built on passion for their hometown's animal husbandry traditions. The Uyanık family has been engaged to this field for 400 years. With branches in İstanbul Beykoz and Bafra, Samsun, they're an example of how private enterprises can collaborate with local communities through a bottom-up approach. They produce healthy meat through partnerships with small producers, eliminating middlemen and providing producers with a fair share of profits.

Therefore, the local people become integral partners of the enterprise. Nebyan Dođal benefits from the local knowledge and skills while involving the community through sustainable job opportunities (See Figure 7). However, dependence on a single enterprise might raise concerns about long-term sustainability (URL-4; URL-5; URL-6).

#### **4.2.4. Satsuma Mandalin**

Agricultural engineer Hasan Çalık has initiated the Satsuma Mandalin project in Gümüldür, İzmir. He bought 5 acres of mandarin orchard without relying on grants or loans when establishing the company. Satsuma Mandalin aims to eliminate brokers and connect producers directly with consumers. This approach increases producer income and offers consumers competitive prices for high-quality products. Targeting a niche market of upper-crust consumers highlights the potential for tailored marketing strategies within this model. However, relying on online sales might limit accessibility for producers with limited technological resources.

This project provides a seasonal job opportunity for local people in the surrounding villages. Their role as seasonal workers, however, does not provide a sustainable income source (Satsuma Mandalin, n.d.; H. Çalık [1], in-depth interview, 5 July 2017).

#### **4.2.5. Doğal Besin Bilinçli Beslenme**

Doğal Besin Bilinçli Beslenme (Natural Food, Conscious Nutrition) is both a FaCoin project and a “Participant Guarantee System” (DBB, n.d.: para. 1), a model originating from Community Supported Agriculture. Initiated by Ceyhan Temürcü and Nihal Poyraz Temürcü in 2009 in Tahtacıörencik Village, Ankara. Ceyhan and Nihal Temürcü, inspired by their friend Serdal Tanal’s organic farming struggles and a text about village life, initiated a project in June 2009. They decided to move to Tahtacıörencik Village in Güdül and collaborate with writer Ali Gökmen to address the lack of market for organic produce.

DBB aims to connect producers of natural food with those who value healthy eating. While initially involving only Ankara Tanal Farm, producers from other regions of Turkey such as the Çıralı-Ulupınar Cooperative, olive oil producers from Urla, Elçin in Milas, and local Tahtacıörencik villagers now participate. In this system, producers cultivate based on coming orders, thereby reducing the risk of overproduction, but also lacking guaranteed demand for their produce (N.P.Temürcü<sup>3</sup>, in-depth interview, 2017; DBB, n.d.).

While independent initiatives demonstrate innovation and resilience, examples of initiatives backed by financial support from the state or other organizations can offer valuable insights for scaling up and fostering collaboration. The cases discussed below illustrate how such support can amplify the positive impact of rural development efforts.

#### **4.2.6. The Atölye Muğla 1 Project**

The Atölye Muğla 1 Project, launched in 2014, is a collaboration between the Muğla Metropolitan Municipality and Kentsel Strateji, a private company specializing in community participation for neighborhood revitalization. The pioneers of the project are city planners; Sila Akalp and Ali Faruk Göksu. Recognizing Muğla’s dual identity as a popular coastal tourist destination and a region with vulnerable rural areas facing depopulation, the project aims to create a harmonious balance between tourism, agriculture, and animal husbandry. Initial funding was secured through the Loan for Rural Production and Sustainability of Rural Life, a government program supporting rural development initiatives. To actively engage the local

---

<sup>3</sup> An in-depth interview was held with one of the initiators of DBB Nihal Poyraz Temürcü on 14 October 2017 about the story of DBB.

community, the project established Hemşehri Union, a neighborhood union incorporating volunteers who work together in organized ateliers to develop sustainable projects.

Thirteen pilot projects tailored to specific provinces were conceived within this framework, considering the seasonal cycle of production and consumption between coastal and rural regions (See Figure 8). During peak summer months, coastal infrastructure often struggles to meet increased demand, making the idea of transporting fresh produce from rural areas to the coast a promising solution for both economic and environmental sustainability (Kentsel Strateji, 2017; S. Akalp<sup>4</sup>, in-depth interview, 17 November 2017).

Recognizing Muğla's dual nature as a bustling tourist destination and a region with struggling rural communities experiencing depopulation, this project fosters collaboration between these areas. Each village is assigned a specific product to produce, with residents handling production. The project's system encourages volunteers' participation in various stages of production, ensuring the products reach coastal areas during the tourist season.

#### **4.2.7. Lavanta Kokulu Köy**

Lavanta Kokulu Köy (Lavender Scented Village) launched in 2015 in Kuyucak Village, Isparta (See Figure 9), was initiated by Ali Sağdaş and Gürkan Cunda, an agricultural engineer with the County's Agriculture and Animal Husbandry Directorate. The project emerged as a response to the decline in rose prices, prompting interest in lavender farming as a more lucrative alternative. To empower the local community and provide a sustainable income source, the project leveraged various government support programs and loans, including the İzmir Development Agency Loan and the "Future is in Tourism" Loan from the Ministry of Culture and Tourism. For 6.5 months, extensive training was provided to the local community. Topics covered hygiene, cooperatives, public speaking, local tourism activities, home boarding, entrepreneurship, aromatic plant breeding, and field education. This laid the foundation for the establishment of the Lavender Scented Village Women Entrepreneurs Cooperative, designed to manage future projects collaboratively and effectively.

---

<sup>4</sup>An in-depth interview was held with Sila Akalp who is one of the partner of Kentsel Strategy on 18 November 2017 about the story of Atölye Muğla Bir.

Today, the village has blossomed into a popular tourist destination, with its lavender farms attracting photographers and nature enthusiasts. The local community, empowered by the project, now produces, and sells various lavender-derived goods like honey and soap directly to visitors. Remarkably, the “Future is in Tourism” project continues to provide financial support despite its official completion in July 2017. Additionally, educational meetings and conference participation remain ongoing, ensuring sustained development and knowledge sharing (A. Sağdaş<sup>5</sup>, in-depth interview, 16 October 2017; URL-10).

#### **4.2.8. Nallıhan**

Nallıhan, a county in Ankara, provides a remarkable example of involving rural communities through sustainable development initiatives. Central to this success is the Nallıhan Tourism Volunteers Association, established in 2005 by Mustafa Bektaş. This dynamic group has spearheaded six projects, four funded by the Ankara Development Agency and two by the EU National Agency. Their overarching goal: attract tourists through “controlled mass tourism” that generates economic benefits while safeguarding cultural heritage.

Nallıhan’s natural beauty and historical treasures, including Kuş Cenneti bird sanctuary and archaeological sites, draw visitors eager to experience authentic Turkish culture. Through collaboration with local authorities and specialized agencies, the association ensures responsible tourism practices and minimizes negative impacts on the environment and traditional values. Importantly, this development strategy empowers local women. Traditional handicrafts like needlework and silk cosmetics are revitalized thanks to their skillful hands and generations-old expertise. These unique products not only generate income for artisans but also showcase the rich cultural tapestry of Nallıhan.

Nallıhan’s story demonstrates the positive impact of collaborative, community-driven initiatives. By promoting sustainable and responsible tourism, fostering cultural preservation, and empowering women, Nallıhan offers a valuable model for rural development that respects both economic and environmental goals (NALTUD, n.d; TUORMAG, 2015; Sabancı Vakfı, 2017).

---

<sup>5</sup> An in-depth interview was held with one of the initiators of Lavanta Scented Village Project Ali Sağdaş on 16 October 2017 about the story of Lavanta Scented Village.

Projects benefiting from state support and grants tend to involve collaboration with more stakeholders, leading to more sustainable production practices. Furthermore, cooperatives offer the most effective way to support small-scale producers. Serving as a prime example, Tire Süt cooperative in Turkey has achieved remarkable success, even establishing brand recognition within its cooperative structure. It remains an active and thriving cooperative to this day.

#### **4.2.9. Tire Milk Cooperative [Tire Süt Kooperatifi]**

While cooperatives offer a powerful tool for small farmers in Turkey, effective management and member engagement remain significant challenges. The Tire Süt cooperative stands out as an exceptional example.

The Tire Milk cooperative was founded in 1926 by a group of farmers in the Tire district of İzmir, Turkey. The cooperative initially focused on milk production, but it has since expanded to include a variety of other products, including cheese, yogurt, and butter. The cooperative has over 2,000 members and employs over 1,000 people (Işık & Öztornacı, 2019).

It is led by veteran farmer Mahmut Eskiyörük, the cooperative prioritizes sustainability and quality by reducing costs and raising product standards (See Figure 10). They cater to their members' every need, providing seeds, fuel, machinery, tools, and even daily necessities through their own agricultural market. This comprehensive support allows the cooperative to thrive, with membership steadily growing.

The Tire Milk cooperative goes beyond mere production. Collaborating with İzmir Municipality in the *Süt Kuzusu* project, they supply fresh milk to schoolchildren. Their dedication to quality has earned them the prestigious title of "The World's Best Rural Development Model" by the UN's Food and Agriculture Organization. Their brand, "Tire Süt," now encompasses a range of high-quality food products, from dairy essentials like milk and yogurt to meats and sausages. Tire Süt Kooperatifi is a testament to the transformative power of collaboration and effective management, offering a blueprint for empowering agricultural communities in Turkey and beyond (URL-2; URL-3).

The Tire Milk cooperative is a good example of how cooperatives can be a powerful force for good in rural communities. By collaborating with stakeholders and providing support to small-scale producers, cooperatives can help to ensure the sustainability of rural agriculture and the well-being of rural communities.

## **5. Insights Gained: Key Takeaways from the Initiatives**

While commendable efforts have been made to preserve rural architecture and life in Turkey, these initiatives often fall short due to their fragmented approach. This fragmentation often stems from their initial motivations focusing on specific aspects (architecture or life) and a lack of supportive frameworks, including comprehensive state regulations and robust financial incentives.

Current efforts tend to treat these aspects as isolated concerns, focusing solely on architectural preservation or revitalizing rural life independently. However, as mentioned earlier, a holistic approach is crucial. This means embracing both the architecture and the way of life it embodies as a unified heritage.

While promoting the use of natural materials is a valuable step, the initiatives discussed for sustainability of rural architecture are not focusing on one area. These efforts do raise awareness about environmentally friendly materials and their positive impact on both human health. To achieve a truly integrated approach, we must also understand how physical spaces shape rural architecture and how local communities interact with them.

It is possible to see various types of non-governmental tools and practices for sustainability of rural life. These are categorized according to their intention and scope (in terms of stakeholders): private enterprises, farmer-consumer interfaces (FaCoIn projects), cooperatives, and development projects (see Table 2). These models can be employed individually or combined within a single project, offering varied roles and advantages for local communities.

Private enterprises, typically initiated by external entrepreneurs with commercial intent (see Table 2), provide local farmers with alternative income opportunities and leverage their knowledge and skills. While farmers in these arrangements function as employees, their dependence on a single entity raises concerns about the long-term sustainability of rural communities (see Table 3).

Farmer-consumer interfaces, exemplified by FaCoIn projects, offer a direct link between producers and consumers, bypassing intermediaries and maximizing producer profits while reducing consumer costs. In these systems, commonly established by outsiders or entrepreneurs, farmers primarily assume the role of producers (often within broader collaborations, as shown in Table 2).

Cooperatives play a crucial role in strengthening and elevating the market competitiveness of small producers. By pooling resources, they effectively reduce expenses, enabling collective purchasing of inputs like seeds, fertilizers, and equipment. This translates into economies of scale and cost savings, ultimately enhancing profitability for individual members. Beyond cost reduction, cooperatives also contribute to enhanced product quality. Through collective learning and knowledge sharing, members adopt improved production practices and standards. This commitment to quality allows cooperatives to develop distinctive brands that command premium prices in the market.

The role of peasants within a cooperative transcends mere production. They actively participate in decision-making processes, contributing to strategic planning and marketing initiatives. This fosters a sense of ownership and collaboration, empowering members and building capacity for sustainable rural development.

Development projects serve as powerful tools for rural revitalization, leveraging the collaborative strength of local actors. These initiatives aim to enhance both the social and economic well-being of a region, encompassing diverse models like cooperatives, FaCoIn initiatives, and private farms. The core objective lies in empowering local communities. This entails educational programs, technical support, and capacity building, particularly for small producers. Continuous monitoring of both the community and its outputs ensures long-term sustainability and project effectiveness.

Funding sources are diverse, including private companies, government loans, and individual contributions. Voluntary projects operate with minimal resources, while FaCoIn and private ventures rely on external support. Cooperatives often benefit from ministry or municipality grants. In essence, development projects provide a collaborative pathway for rural communities to flourish, fostering social and economic growth while preserving their unique identities (See Table 4).

### **Conclusion**

Once an agrarian nation, Turkey's rural areas have witnessed a stark decline driven by factors like agricultural hardship, land distribution issues, and urbanization pressures. This decline has eroded traditional livelihoods, threatened rural spaces, and endangered the unique cultural heritage embodied in rural architecture. Despite growing awareness of these issues, existing solutions often fall short. Sustainability efforts tend to approach

rural life and architecture in isolation, neglecting their interconnectedness. While valuable NGO initiatives offer alternative income sources and development models, their voluntary nature limits their widespread implementation. Despite the challenges highlighted, these initiatives also offer valuable lessons and positive effects. Recognizing the unique character of each rural area is crucial. Therefore, conservation actions should be tailor-made, with site-specific decisions informed by local knowledge and adapted to the existing production systems and the surrounding geography and climate.

For continuous production, eliminating middlemen and establishing direct communication between producers and consumers is crucial. Local people should be actively involved in decision-making and share responsibility for the project's sustainability, alongside other stakeholders. Their roles within the project should empower them as producers, collaborators, or decision-makers. Local involvement is equally vital for rural architecture conservation. Their knowledge of construction techniques and materials is invaluable, and their connection to rural production fosters a deeper understanding of the built environment. However, some existing Fa-Coin projects solely position the local community as employees, raising concerns about the project's long-term sustainability. In conclusion, safeguarding Turkey's rural heritage requires a transformative approach. By prioritizing local participation, fostering interconnected solutions, and addressing the existing limitations, a future of thriving rural communities and their cultural heritage becomes possible.

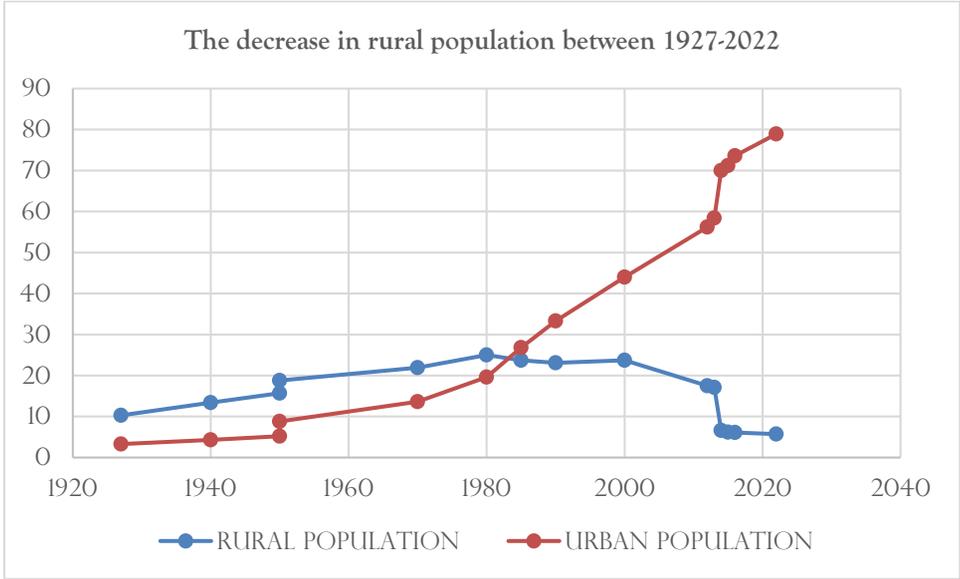
## **References**

- Altın, Hilmi (2003). *Village Policies in Turkish Republic Era (1950-2000)*. PhD Thesis. İzmir: Dokuz Eylül University.
- European Commission (1996). *The Cork Declaration: A Living Country Outside*. The European Conference on Rural Development.
- European Council (1977). *The Granada Appeal: Rural Architecture in Regional Planning, Rural Architecture in Regional Planning*. Symposium No: 2 of European Programme of Pilot Projects, Granada.
- Ezer, Feyzullah (2010). "1929 Dünya Ekonomik Krizi'nin Türkiye'ye Etkileri". *Fırat Üniversitesi Sosyal Bilimler Dergisi*, 20(1): 427-442.

- Günaydın, Gökhan (2008) “Küreselleşen Piyasa ve Yoksullaşan Köylü” TMMOB Ziraat Mühendisleri Odası. [http://www.zmo.org.tr/genel/bizden\\_detay.php?kod=8877&tipi=38&sube=0](http://www.zmo.org.tr/genel/bizden_detay.php?kod=8877&tipi=38&sube=0)
- Günaydın, Gökhan (2010) Tarım ve Kırsallıkta Dönüşüm: Politika Transferi Süreci/AB ve Türkiye. Ankara: Tan Kitabevi.
- ICOMOS (2011). The Valletta Principles for the Safeguarding and Management of Historic Cities, Towns and Urban Areas, Paris.
- ICOMOS/IFLA (2013). ICOMOS-IFLA Principles Concerning Rural Landscapes as Heritage, Final Draft for Distribution to the ICOMOS Membership in View of Submission to the 19<sup>th</sup> ICOMOS General Assembly.
- ICOMOS/IFLA (2014). Concerning Rural Landscapes as Heritage, 18<sup>th</sup> General Assembly and Scientific Symposium.
- Işık, Veysel & Öztornacı Burak (2019). “Tarımsal Kooperatiflerde Çalışanların İşe Bağlılıkları Üzerine Bir Araştırma: Tire Süt Kooperatifi Örneği”. *Tarım Ekonomisi Dergisi*, 25(2): 161-167.
- Kanca, Osman Cenk (2012). “1950-1960 Arası Türkiye’de Uygulanan Sosyo-Ekonomik Politikalar”. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 9(19): 47-63.
- Kayıkçı, Sabrina (2009). Administration of Rural Area in Turkey. PhD Thesis. Ankara: Ankara University.
- Kazgan, Gülten (1999). “1980’lerde Türk Tarımında Yapısal Değişme”. 75 Yılda Köylerden Şehirlere. İstanbul: Tarih Vakfı Yayınları, 31-37.
- Köymen, Oya (1998). “Cumhuriyet Döneminde Tarımsal Yapı ve Tarım Politikaları”. 75 Yılda Köylerden Şehirlere. İstanbul: Tarih Vakfı Yayınları, 1-31.
- Oktar, Suat & Varlı, Arzu (2010). “Türkiye’de 1950-54 Döneminde Demokrat Parti’nin Tarım Politikası”. *Marmara Üniversitesi İİBF Dergisi*, 28(1): 1-22.
- Şener, Sefer (2004). “İkinci Dünya Savaşı Yıllarında Türkiye’de Tarım Politikası Arayışları”. *Kocaeli Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 7: 73-92.
- Sinan, Pakize Ebru (2012). The Effects of Planning-Politics Relationship on Turkey’s Rural Planning Process. Trabzon: Karadeniz Technical University.

- Tan, Sibel, et al. (2015). Türkiye’de Tarımsal Destekleme Politikaları”. *International Conference on Eurasian Economies 2015*. İstanbul: Eurasian Economists Association, 266-270.
- UNESCO (2012). Florence Declaration on Landscape, Final Declaration of the UNESCO International Meeting on the “International Protection of Landscapes”, the 40<sup>th</sup> Anniversary of the World Heritage Convention.
- URL-1: “Buğday Ekolojik Yaşamı Destekleme Derneği”. <http://www.bugday.org/> (Access: 2017).
- URL-2: “Tire Süt Kooperatifinin Örnek Öyküsü, Para Dedektifi”. <https://www.youtube.com/watch?v=zY2fKjTY5Ck> (Access: 2017).
- URL-3: “Tire Süt Kooperatifi”. <https://www.tiresutkoop.org> (Access: 2017).
- URL-4: “CMR Medya-Gastro Plato, About Nebyan Doğal”. <https://www.youtube.com/watch?v=71sH71SS0Nk> (Access: 2017).
- URL-5: “Nebyan Doğal”. <https://nebyandogal.com/hikayemiz> (Access: 2017).
- URL-6: “Mutfak İnsanları”. <https://www.youtube.com/watch?v=ruLsVg45xNw> (Access: 2017).
- URL-7: Yıldırım, Ali Ekber (2023). “Tarımda ‘Devrim’ Niteliğinde Kanun ve Uygulamalar”. <https://www.tarimdunyasi.net/2023/03/28/tarimda-devrim-niteliginde-kanun-ve-uygulamalar/> (Access: 2023).
- URL-8: YBE (2016). “Building Biology and Ecology Institute Turkey”. <http://www.yapibiyolojisi.org/institute/?lang=en> (Access: 2023).
- URL-9: Ekolojik Rehber (2011). “Ekolojik Mimari ve Doğal Yapı Ağı”. <https://www.facebook.com/EkolojikMimari.DogalYapi.Agi/> (Access: 2023).
- URL-10: “Lavanta Kokulu Köy (2016)”. <https://www.facebook.com/keciborlulavantailekalkiniyor/> (Access: 2017).
- URL-11: “İpek Hanım Çiftliği” [http://www.ipekhanim.com/ipek\\_hanim\\_ciftligi/ciftlige\\_giris.html](http://www.ipekhanim.com/ipek_hanim_ciftligi/ciftlige_giris.html) (Access: 2017).
- Yüceer, Sema et al. (2020). “Türkiye’de 2000-2020 Döneminde Tarımsal Destekleme Politikalarının Gelişiminin İncelenmesi”, *ÇOMÜ LJAR*, 1(2): 36-46.

**Annexes**



*Table 1.* The decrease in rural population in Turkey between 1927–2022 (TÜİK: Turkish Statistical Institute, 2024).

Non - Governmental Tools and Actions for Sustainability of Rural Life				
	Private Enterprises	FACoin (farmer-consumer interface)	Cooperatives	Development Projects
Initiated by External Entrepreneurs	İpek Hanım Çiftliği; Nebyan Doğal	Satsuma Mandalin, Doğan Besin Bilinçli Beslenme		Nallıhan, Lavanta Kokulu Köy
Initiated by Ministries and Municipalities				Atölye Muğla Bir
Initiated by Local Producers			Tire Milk Co-operative	

*Table 2.* Non-governmental efforts for sustainability of rural life.

		Farms - Animal H.	FaColn	Coopertaive	Development Project
Local Community as	Employee	NO/ESPA			
	Producer		NO/ESPA	NO/ESPA	NO/ESPA
	Collaborator	NO/ESPA		NO/ESPA	NO/ESPA
	Decision Maker				NO/ESPA

Table 3. Role of the local community in different types of projects.

			Farms - Animal H.	FaColn	Cooperative	Development Project
Budget for the Project: Aids, Grants and Loans	State	Development Agencies				NO/ESPA
		Ministry, Municipality Grants			NO/ESPA	NO/ESPA
	International	Future in Tourism (UN)				NO/ESPA
		EU National Agency		NO/ESPA		NO/ESPA
	Others	Private Company	NO/ESPA	NO/ESPA		NO/ESPA
		Voluntary Basis		NO/ESPA		NO/ESPA

Table 4. The financial sources of discussed tools and actions.

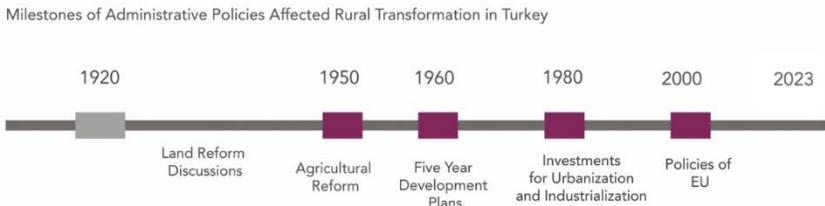


Figure 1. Milestones of Agricultural Policies Affected Rural Transformation in Turkey.

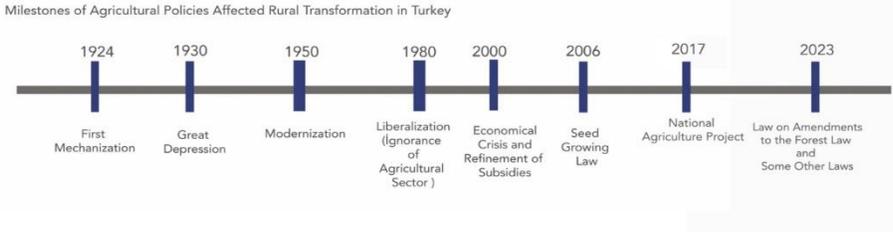


Figure 2. Milestones of Legislative Policies Affecting Rural Transformation in Turkey.

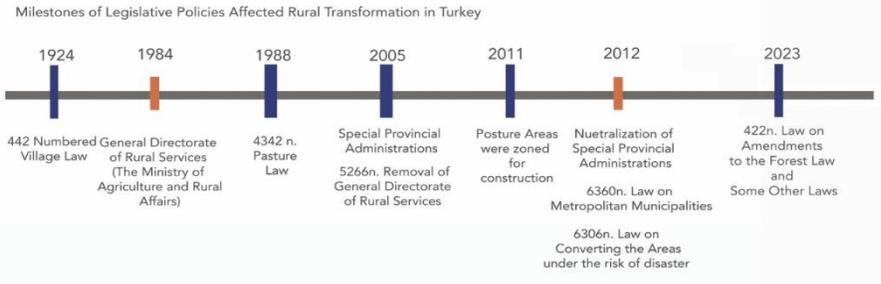


Figure 3. Milestones of Administrative Policies Affecting Rural Transformation in Turkey.



Figure 4. Milestones of Conservation of Rural Areas Through International Charters.



Figure 5. Methodology of the Study.



Figure 6. İpek Hanım Farm, Nazilli, Aydın.



Figure 7. Local collaborators, Nebyan Doğal, Samsun (Nebyan Doğal, 2017).



Figure 8. 13 different projects for 13 Province, Atölye Muğla Bir, Muğla (Kentsel Strateji, 2017).



Figure 9. Levander Scented Village, Isparta (Lavanta Kokulu Köy, 2016).



*Figure 10. Tire Milk Cooperative (Tire Süt Kooperatifi, 2017).*

The following statements are made in the framework of “COPE-Code of Conduct and Best Practices Guidelines for Journal Editors”:

**Authors' Note:** The study in question was produced from Vacide Betül Kurtuluř's doctoral thesis titled “Understanding the Integrity of Rural Life and Architecture for Sustainable Conservation”, which was completed under the supervision of Neriman řahin Güçhan.

**Ethics Committee Approval:** Ethics committee approval is not required for this study.

**Declaration of Conflicting Interests:** The authors have no potential conflict of interest regarding research, authorship or publication of this article.

**Author-Contributions Statement:** The first author wrote the article and the second author served as a consultant.