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RENEWABLE ENERGY COOPERATIVES of TÜRKİYE

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CURRENT STATUS OF RENEWABLE ENERGY COOPERATIVES in TÜRKİYE

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Report

The Current State of Renewable Energy Cooperatives in Türkiye

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FOREWORD

If we were asked to make an assessment on the occasion of the tenth anniversary of the Energy Cooperatives, I think we should start by talking about the importance of cooperatives in society. This tenth anniversary becomes even more important when it coincides with 2025, which has also been declared the "International Year of Cooperatives" by the United Nations. When we think of cooperatives, we think of a structure that draws all its strength from the local level, that creates, protects and preserves local economic balances.

The beginning of sensitization about Renewable Energy in our country is actually quite new. Especially the development of the Renewable Energy Cooperative initiative or the voicing of this issue is quite new. With these new movements, there is a very rapid renewable energy boom. Especially solar investments have developed much faster than expected and planned.

The main reason for this development is the enactment of the Unlicensed Energy Regulation by EMRA in 2011, which allows consumers to procure their electricity needs from the nearest generation facility. This legal regulation allowed individuals to generate their own electricity through small facilities. In 2016, a complete transformation took place in our country with the addition of the definition of "Renewable Energy Cooperatives" to the same regulation. Within a year, around 20 energy cooperatives were established in different regions of the country, with citizens coming together and joining forces to generate electricity.

In 2022, according to the results of the "Energy Consumption and Economy Survey in Türkiye" published by the Clean Energy News Portal, 79% of people in expressed that they are concerned about foreign dependency in energy. The main reason for this concern is Türkiye's dependence on foreign energy resources. Foreign dependency in natural gas, oil and even coal is at high levels. Especially for geopolitical reasons, we can think that this concern is not unfounded at all. As a solution to this, energy production with renewable energy sources has come to the fore. In the examples of cooperatives in this field given in this book, we see the theme of reducing our country's energy dependence as the main justification. Citizen initiatives not only try to solve their own electricity needs by coming together, but also prioritize reducing their country's dependence on foreign

energy.

The first renewable energy cooperative in our country was established in Denizli in 2015. To date, more than 50 energy cooperatives have been established across the country. During this ten-year period, there have been some closures. There are various reasons for closure. However, after 2019, cooperatives entered a period of stagnation. A change in the regulation this year closed the way for consumption aggregation for different subscribers at different addresses, stopping the development of renewable energy cooperatives. Different ways were tried, different solutions were tried to be created/found. However, this process has been very tiresome, especially for those cooperatives that have not yet started production. They struggled with various financial problems, problems among members and, of course, worries about the future. Today, 45 of these cooperatives are still active. We visited 11 of these cooperatives and tried to compile their problems, hopes, dreams and political visions of the future for you. 11 of these 45 cooperatives are still producing electricity. The others are silent but hopeful, waiting for a change in the legislation to provide them with a future.

With the financial support of GGF (Global GreenGrants Fund), we wanted to create a map of renewable energy cooperatives in our country. Deniz and Berkay from our team traveled about 5 thousand kilometers. They tried to reach and listen to energy cooperatives from the westernmost to the easternmost part of the country. Our friends Mert, Burcu and Melis compiled all the editorial work and recorded the conversations for you. They managed to compile all the beautiful and colorful memories for you. We owe many thanks to all our friends who helped us in this long and arduous process, especially to the cooperatives that opened their doors to us. Our designer friend Özgün Çağlar Berkit, who has put all his superior talents into making this book reach your hands, has tried to make this book easier to read. As TROYA Renewable Energy Cooperative and its association, TROYA Environment Association, which has been following the legal legislation until today and has even made efforts to develop the energy cooperatives of our country in Europe, in the European Renewable Energy Cooperatives Association REScoop.eu, we know that we have a long but hopeful road ahead of us.

Oral Kaya
President of Troya Environmental Association

INTRODUCTION

Energy cooperatives are member-oriented, democratically structured enterprises established to meet local energy demand, increase sustainable energy production through the efficient use of renewable resources, and strengthen social solidarity. Although the establishment processes, technologies, production and service models, and legislation governing energy cooperatives vary in different parts of the world, their main objectives are to meet local energy demand, create an alternative to the centralized structure of energy systems, and support environmental sustainability.

The History of Cooperatives and Energy Cooperatives in Türkiye

The tradition of cooperatives in is rooted in historical practices such as the Anatolian culture of mutual aid, imece and ahilik. Law No. 1163 on Cooperatives, published in the Official Gazette in 1969, laid the foundations of the modern cooperative concept by defining cooperatives as "partnerships with variable shareholders and variable capital established to protect the specific economic interests and needs of their members through mutual assistance, solidarity and surety". The increase in the number of cooperatives during the Republican era played an important role in local development and social welfare. In 2012, Article 124 of the Turkish Commercial Code included cooperatives among commercial companies, paving the way for both economic and social empowerment of these enterprises. The introduction of energy cooperatives in Türkiye is much more recent. The National Cooperatives Action Plan (2012) first introduced the concept of "Energy Cooperatives", and the "Regulation on Unlicensed Electricity Generation in the Electricity Market", which entered into force in 2011, laid the legal groundwork for cooperatives to operate in energy generation. One of the first energy cooperatives was established in 2014 in the Tavas district of Denizli; however, various structural and administrative difficulties were encountered in the process of becoming operational. The first active energy production cooperative in Türkiye was established in Kayseri.

Legal Framework and Development of Energy Cooperatives

The establishment and operation of energy cooperatives in Türkiye has been made possible mainly through two main regulations:

1. Regulation on Unlicensed Electricity Generation in the Electricity Market (2013):

The Regulation sets out the conditions for the establishment of cooperatives that will operate in unlicensed electricity generation. Within the scope of the Regulation, Electricity Generation Facilities located in the same distribution region and based on common consumption can be established

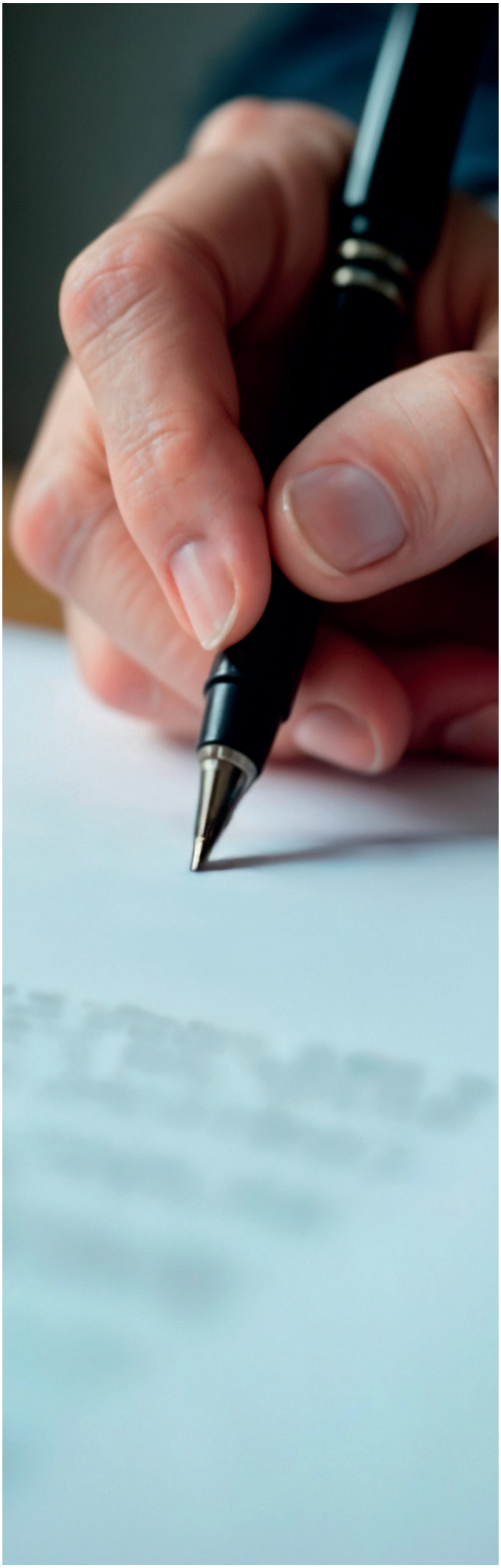
through a partnership without direct connection with the generation facilities of consumers. Capacity limits determined in parallel with the number of memberships (e.g. 100 members for 1 MW generation, 500 members for 2 MW) allow the establishment of facilities.

2. Regulation Amending the Regulation on Unlicensed Electricity Generation in the Electricity Market (2016):

Published on October 22, 2016, this regulation expands the application areas of the first regulation and further clarifies the principle of consumption aggregation. With this regulation, the facility capacity, number of members and installation conditions of cooperatives were detailed, and new application models such as "Rooftop SPP Applications" provided cooperatives with an energy generation capacity of up to 5 MW. The aim was to increase local production, prevent energy losses and support local capital. However, some challenges emerged in the process until 2019. Prior to May 2019, cooperatives based on consumption aggregation could be established by groups of subscribers with the same connection point. However, with the amendment to the regulation dated 12 May 2019, the limitation of the consumption aggregation principle prevented subscribers from uniting under a cooperative structure if they are not located at the same connection point; thus, new and stricter conditions for the establishment of energy cooperatives emerged. This directly affects the investment processes of cooperatives and the dissemination of local energy generation models. In addition, other state-led efforts - such as the benefits allocated to cooperatives under the "Rooftop SPP Scheme", IPARD loans and EU funds for financing support - provide important support for the economic sustainability and growth of energy cooperatives. However, legislative uncertainties and a constantly updated legal framework present both opportunities and risks for the development of energy cooperatives.

In conclusion, renewable energy cooperatives in Türkiye have significant potential for local energy production and sustainable development. However, in order to fully realize this potential, legal regulations to strengthen cooperatives and more effective support for local energy cooperatives are needed. This will be an important step that will contribute to Türkiye's energy independence and support environmental sustainability.

Melis Yılmaz, PhD
Project Coordinator, Troya Environmental Association



	Balcı Zeki Renewable Energy Cooperative	Çorum Renewable Energy Cooperative	Ege Electric Power Generation and Consumption Cooperative	Izmir Renewable Energy Cooperative	Kayserı Furniture Makers Renewable Energy Cooperative	Kulak Village Renewable Energy Cooperative	Nilüfer Municipality and Energy Cooperatives	Muğla Karyalılar Renewable Energy Production Cooperative	Troya Renewable Energy Cooperative	Turan Renewable Energy Cooperative	Yıldız SPP Energy Cooperative
Energy policies and social policies harmony between is lacking.	✓	●	●	✓	✓	●	●	●	●	✓	●
Old and inefficient energy infrastructures are a major obstacle.	●	✓	✓	●	✓	✓	●	●	✓	✓	●
Public funding and support for energy cooperatives is insufficient.	✓	✓	✓	✓	✓	●	✓	✓	✓	✓	✓
Citizens and energy-poor households lack confidence in the process.	✓	●	✓	✓	✓	✓	✓	✓	✓	✓	●
The Union of Energy Communities needs to be established.	✓	✓	✓	✓	✓	✓	●	●	●	✓	✓
Local energy for network operators communities is important.	✓	✗	✗	✗	✓	✗	✓	✓	✓	✓	✗
Special share prices should be set for vulnerable groups.	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓
Energy cooperatives are costly to set up.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 1
This table identifies the main barriers faced by energy communities and suggests solutions to overcome these barriers. This assessment provides a roadmap on which strategies should be prioritized to ensure the sustainable growth of energy communities and overcome the barriers they face.

✓ Feasibility and impact of proposed solutions

✗ Current challenges and barriers

● Unanswered questions

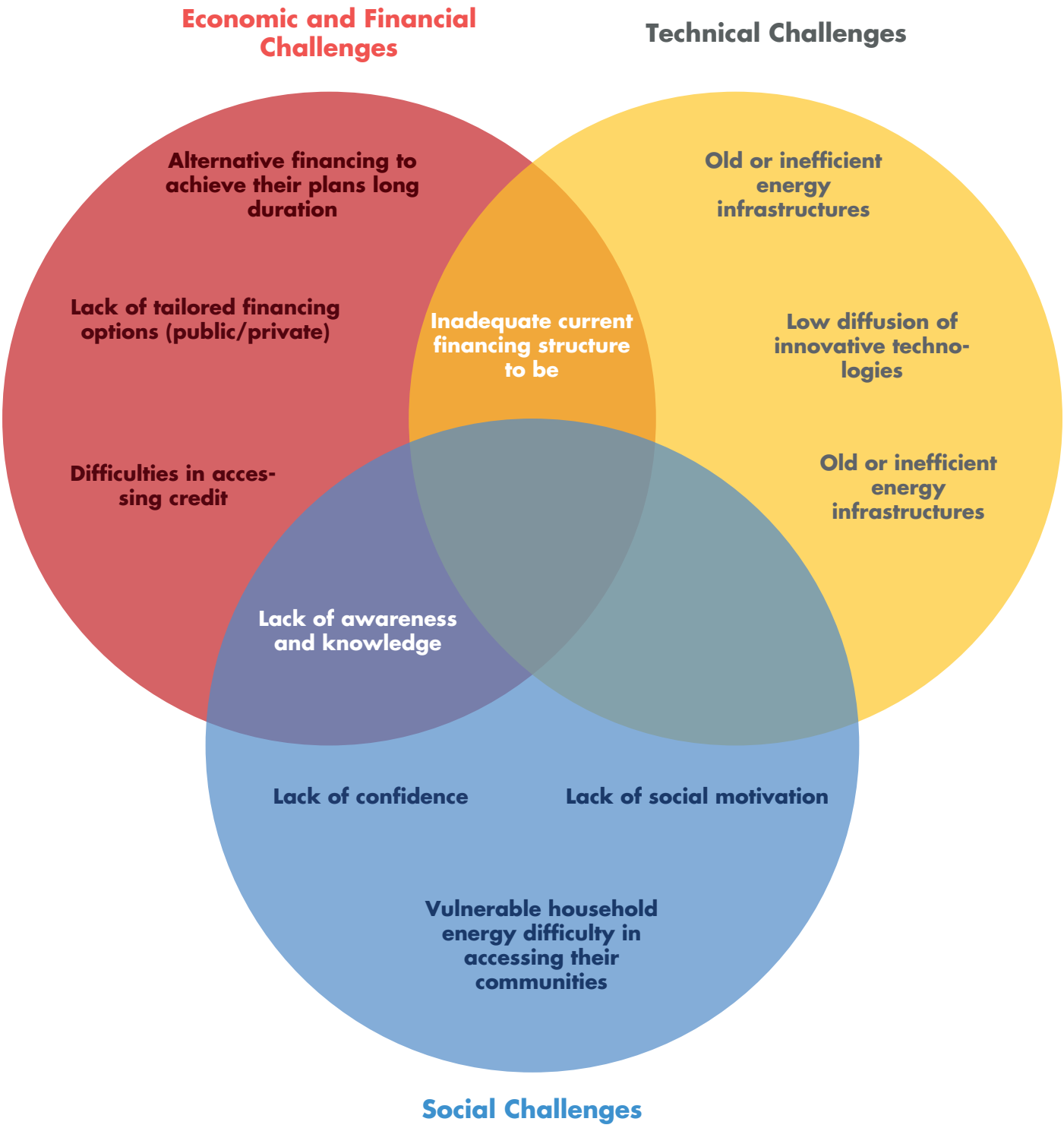
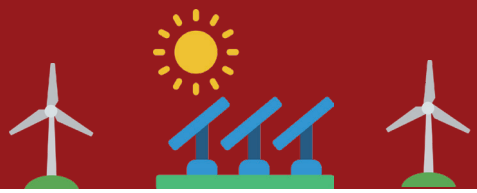


Diagram1
This diagram categorizes the challenges facing energy cooperatives into three main categories: economic-financial, technical and social. Each category illustrates the main barriers affecting the growth and sustainability of cooperatives. The challenges faced by energy cooperatives are often interconnected, and factors such as financial instability, lack of technical infrastructure and social acceptance should be considered together. In this context, it is crucial to integrate supportive public policies, community-based financing mechanisms and innovative technology solutions. This graphic provides a reference point to better understand the scope of support needed by cooperatives and to propose solutions.

CURRENT STATUS OF RENEWABLE ENERGY COOPERATIVES IN TÜRKİYE

BALCI ZEKİ RENEWABLE ENERGY COOPERATIVE



7 Members

Adana

Reducing Energy Dependency and Promoting Clean Energy

1 Establishment & Mission

Balcı Zeki Renewable Energy Cooperative was established in 2015 by 7 members. Initially, the cooperative set out with the goal of establishing a solar power plant and aimed to produce sustainable energy by utilizing local resources. The cooperative's vision is to promote both individual energy independence and social benefit.

2 Challenges

Balcı Zeki Renewable Energy Cooperative faced several significant challenges during its establishment. Firstly, slow bureaucratic processes prevented the cooperative from realizing its projects on time. Lack of financing also hindered the growth and sustainability of the cooperative's projects, and the expected financial support, especially from European Union projects, was not received. Another obstacle encountered during the establishment of the cooperative was the lack of cooperation with local governments. This has prevented the cooperative from taking critical steps such as land procurement and infrastructure works. In addition, inadequate technical infrastructure and lack of expert support were other major challenges that prevented the cooperative from operating efficiently. As a result of these challenges, the cooperative was unable to move to the energy production phase.

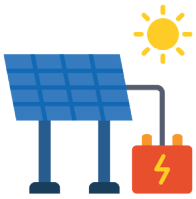
3 Financing

The financing for the establishment of the cooperative was entirely covered by the equity of Abdulsamed Akduman, one of the founders.Since they were not aware of European Union and national funds, they could not benefit from these supports.There was also no collaboration with local authorities.The lack of additional financial resources was a major factor preventing the cooperative from moving into the production phase.

4 Members & Social Ties

Initially, the cooperative started with 7 members from the circle of relatives.These members contributed their own financial resources to the project for the establishment of the cooperative and initially provided a great deal of voluntary support.However, due to the lack of knowledge of the local community, the number of members of the cooperative did not increase over time and remained stable at 7 members.Cooperative members have established some collaborations with engineers who could provide technical support to the project. However, the lack of continuity of this support and the limited interest of local people in energy cooperatives prevented further development of the cooperative.

5 Technical Perspective



The cooperative had initially aimed to build a solar power plant. However, the land acquisition and infrastructure required for a successful installation could not be realized due to lack of cooperation and coordination with local authorities.In addition, expert support and technical consultancy was an important element for a successful installation, but adequate financing was not available.

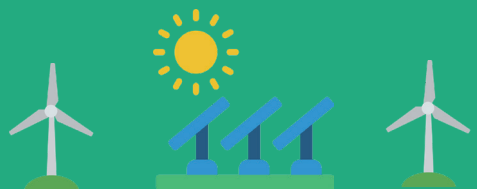
6 Needs

There are several important needs for the cooperative to operate more efficiently and successfully implement its projects. First, financial support is of great importance.Utilizing more funding sources through European Union projects and other national funds is essential to ensure the growth and sustainability of the cooperative. There is also a need for significant improvements in technical infrastructure. Land acquisition, infrastructure works and expert technical advisory support are critical elements for the successful implementation of projects. Finally, local governments need to provide more support to cooperatives and the public needs to be better informed about renewable energy. These steps will play an important role in the long-term success of the cooperative.

Balcı Zeki Renewable Energy Cooperative is an initiative that recognized the need for renewable energy in Türkiye early on and dared to be a pioneer in this field.

Lack of financial support and the inability to cooperate with local governments have seriously hampered the cooperative's ability to achieve its goals.

ÇORUM RENEWABLE ENERGY COOPERATIVE



84 Members

Çorum

Producing Together, Building a Clean Future

Establishment & Mission

Çorum Renewable Energy Production Cooperative was established in 2016 with 7 partners and the necessary procedures were completed in a short time and 84 partners were reached. The aim of the cooperative is to provide social benefit through environmentally friendly energy production and to create a structure that strengthens social solidarity, environmental awareness and local development.

1

2

Many bureaucratic obstacles were encountered during the establishment process. In particular, since the concept of energy cooperatives is a new phenomenon in the eyes of the state, many public institutions were legally challenged. The Ministry of Trade provided some guidance, but there was a lack of coordination with other ministries (Energy, Agriculture, Environment and Urbanization). In addition, the constant change in legislation has caused long-term plans to be interrupted. Low awareness of clean energy at the local level and slow progress of official processes were among the other factors that made the process difficult.

Challenges

Financing

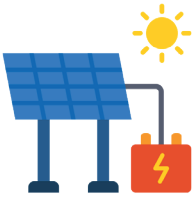
The initial financing of the cooperative was provided by members' dues and TKDK (Agricultural Development Support Institution) grants.Çorum Municipality committed to cover 20% of the cost of the cooperative at the beginning of the project, but bureaucratic obstacles and legislative changes prevented the realization of these goals. There was not enough information about European Union support at the beginning, so these resources could not be utilized. Currently, the cooperative is able to cover its expenses with its own income and distributes dividends to its members.

3

4

The cooperative consists of 84 members belonging to occupational groups such as villagers, artisans, civil servants and housewives. No specific educational or economic criteria are required for membership. Over time, social solidarity and even economic cooperation have developed among cooperative members. There is no institutional leadership, but rather an advisory board with inter-group representatives.

Members & Social Ties



Technical Perspective

Kooperatifin 500 kW gücünde güneş enerji santrali, 2019'dan bu yana aktif olarak çalışmaktadır. Panellerin ilk kurulumu polikristal teknolojisiyle yapılmış, daha sonra monokristal panellere geçilerek verim artırılmıştır. Sistem, uzaktan izleme altyapısına sahiptir. Temizlik işleri, mevsimsel olarak yağan yağmur/karla büyük oranda sağlanmakta, gerektiğinde ise günlük işçilerle temizlik yapılmaktadır. Dağıtım şirketiyle teknik bazlı iletişim sorunları dışında ciddi bir sıkıntı yaşanmamaktadır.

5

6

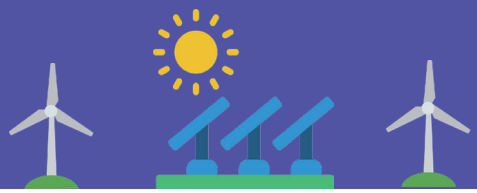
The experience of Çorum Renewable Energy Production Cooperative reveals some basic needs for the sustainability of energy cooperatives. Most importantly, legislation needs to be improved and stabilized. Frequently changing rules make it difficult to implement long-term plans. There is a perceived lack of advisory centers and guidance mechanisms for cooperatives. Such support structures could facilitate the establishment of new cooperatives. As current production capacity is limited, investment support is needed to increase the number of members. In addition, energy efficiency should be promoted, enabling members to consume less and earn more profit. Finally, the need for an umbrella organization to increase the influence of cooperatives in Türkiye is emphasized.

Needs

The cooperative's collective management approach has created a strong consciousness at the local level and ensured the active participation of members.

High distribution costs and lack of sectoral coordination complicate the development and sustainability of the cooperative.

EGE ELECTRICITY PRODUCTION AND CONSUMPTION COOPERATIVE



Denizli

Acting with a Sense of Community

1 Establishment & Mission

The Aegean Electric Energy Production and Consumption Cooperative was established in 2014 as Türkiye's first energy cooperative. It was established with 8 partners, and it was aimed to increase this number over time. The cooperative's main mission is to create a system where local people can produce their own electricity by reducing their electricity costs. Developing an economical and sustainable energy model for individuals living in rural areas constitutes the cornerstone of this mission.

2 Challenges

The cooperative could not implement its projects due to difficulties in acquiring land and obtaining financing during the establishment phase. Disagreements between members, communication problems and limited digital literacy levels negatively affected the overall functioning of the cooperative.

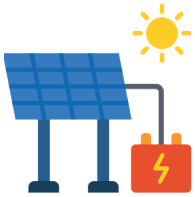
3 Financing

The financing of the Aegean Electric Energy Production and Consumption Cooperative was provided entirely by the members' own resources during the establishment phase. Applications to the European Union and national funds were unsuccessful, and support received from local governments was insufficient. There were disagreements among the members regarding grants and financing methods, which made it difficult for the cooperative to progress.

4 Members & Social Ties

The cooperative currently operates with 8 partners. In order to become a partner, certain conditions are required, such as being a residential subscriber and having a cash capital of 10,000 Turkish Lira. However, disagreements and lack of communication between the partners often make attempts to bring the partners together unsuccessful, limiting the overall effectiveness of the cooperative. Although the cooperative has not reached the production stage, it continues to inform its activities with various activities.

5 Technical Perspective



The cooperative has not yet started energy production. It is stated that cooperation can be made with panel manufacturers operating in Türkiye and that it is possible to tender the projects through EPC (Engineering, Procurement and Installation) companies. However, the lack of anyone with sufficient technical knowledge among the partners makes it difficult for the process to progress healthily. In order to eliminate this deficiency, it is planned to receive technical consultancy support and cooperate with experts. Suitability reports have been received for some roof areas, but the limited areas that can be evaluated as project areas and infrastructural deficiencies have restricted technical progress.

6 Needs

In order for the cooperative to switch to energy production, some administrative and technical innovations are needed. First of all, a suitable land or roof area must be determined. In addition, increasing the level of digital literacy and developing management skills are of great importance. Support from local governments plays a critical role in facilitating processes. In addition, strengthening communication between partners and creating a culture of collective action will be decisive in ensuring the sustainability of the cooperative.

Financing was provided by the partners' own resources.

Land supply, lack of financing, incompatibility among members, lack of technical support and inadequate incentive policies have prevented the cooperative from realizing its potential.

İZMİR RENEWABLE ENERGY COOPERATIVE

42 Members

İzmir

Young Entrepreneurs' Steps to the Future

Establishment & Mission

Izmir Renewable Energy Cooperative was founded in 2016 by 10 entrepreneurs, thanks to the fact that the regulations of the period were in favor of the cooperative and the founding partners working in the field of renewable energy. The main mission of the cooperative is to facilitate individual consumers' access to renewable energy and to provide local people with income while reducing their energy bills. In line with this mission, it was aimed to create both a pilot project and an educational platform by building a 100 kW solar power plant, thus spreading awareness of renewable energy in the city.

1

2

The establishment process of the Izmir Renewable Energy Cooperative has been slow because it could not gain its legal status due to uncertainties in the legislation. Although land searches for a solar power plant have begun, negotiations with various municipalities have not yielded results. The cooperative has also faced major financial difficulties. The failure to provide the expected support from European Union funds and local sources has prevented the cooperative from advancing its projects. Due to these difficulties, the cooperative has not been able to move on to the production phase.

Challenges

Financing

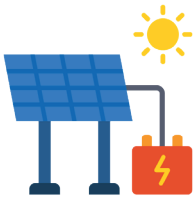
The cooperative financed the project only with the equity capital of the partners during the establishment phase. Although it was considered to apply for additional financial resources such as benefiting from the European Union or national funds, these steps were postponed due to the availability of suitable land and changes in legislation. In the post-2020 period, an investment volume of approximately 100 million TL was reached thanks to the investments and projects by including agricultural activities in the cooperative. In this way, the cooperative has reached a stronger position in terms of sustainability and financially.

3

4

The cooperative has operated with the support of an expert team since its establishment. Despite the departure of 5 founding members due to the difficulties they encountered, the cooperative continues its work with 42 partners and 51 stakeholders with the participation of 37 new members. In addition, cooperative members pioneered the establishment of Seferihisar and Aegean Renewable Energy Cooperatives. All partners are informed through the general assemblies held every year and steps are taken for cooperation with other energy communities.

Members & Social Ties



Technical Perspective

The cooperative has started the technical process required for the installation of the solar power plant, but has not been able to secure the required area due to the lack of cooperation with local governments regarding the provision of suitable land. This fundamental difficulty has prevented the cooperative from achieving its energy production goals.

5

6

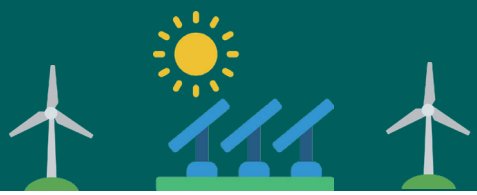
The primary need of the Izmir Renewable Energy Cooperative is to create a legislative structure that eliminates uncertainties and introduces special regulations for cooperatives. In addition, appropriate land allocation and the establishment of sustainable and effective cooperation mechanisms with local governments are of great importance in order to implement their projects.

Needs

By taking a collaborative approach with energy communities, she pioneered the establishment of Seferihisar and Aegean Renewable Energy Cooperatives.

It has not been able to make progress in its projects due to limited cooperation with the local government.

KAYSERI FURNITURE MAKERS RENEWABLE ENERGY COOPERATIVE



2020 Members

Kayseri

Solution for Energy Poverty

1 Establishment & Mission

Kayseri Furniture Manufacturers Renewable Energy Cooperative was established in 2017 as one of the first energy cooperatives operating in Türkiye. The cooperative, which achieved its goal of establishing a rooftop solar power plant (SPP), started energy production in 2018. The mission of the cooperative is to meet the energy needs of small and medium-sized furniture manufacturers and industrial site members, as well as to create an environmentally friendly and economical energy production model.

2 Challenges

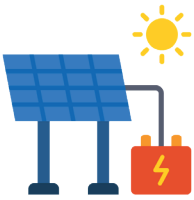
The cooperative has faced a series of challenges since its establishment. The biggest challenge is the inadequacy of the necessary additional financing resources. In addition, legal regulations and disagreements with distribution companies have created financial burdens. In addition, the limited transformer capacity required for energy production and frequent connection problems have prevented the cooperative from reaching the energy production level it aims for. Low education levels and legal problems have also reduced trust in the cooperative. Despite all these challenges, the cooperative continues its activities with determination with the limited resources it has and strives to achieve its growth targets.

3 Financing

The cooperative's financing was provided by a joint-stock company established by the members and a $6 million loan from a development bank. 70% of the $900,000 annual income is spent on loan payments, while 30% is distributed to the members. Inadequate use of European Union and national funds, corporate tax payments and lack of grants create financial burdens. Restrictions imposed on cooperatives and disagreements with distribution companies, especially due to offsetting, result in double distribution fees. Despite the financial difficulties it faces, the cooperative continues to resolutely pursue its goal of sustainable energy production.

4 Members & Social Ties

The cooperative's partners consist of local industrial site members and small-medium scale furniture manufacturers, and the cooperative currently has 2020 active members. The partners include businesses with experience in energy production, and the partners provide the necessary contributions for the cooperative to achieve its goals. In the establishment of the cooperative, businesses with a commercial facility within the boundaries of the industrial site can become partners. Work is being done to create awareness of renewable energy, and communication is provided between members through monthly meetings.



Technical Perspective 5

The cooperative has a strong infrastructure and experience in renewable energy production. High efficiency and high production capacity solar panels were used in the installation, and the annual production capacity is 7-8 MW. In addition, studies have been carried out on the use of solar energy in projects such as street lighting in order to increase energy efficiency. However, some difficulties in the infrastructure, especially limited transformer capacity and connection problems in the panels, limit energy production. The cooperative aims to make continuous improvements to overcome these technical difficulties and provide more efficient energy production.

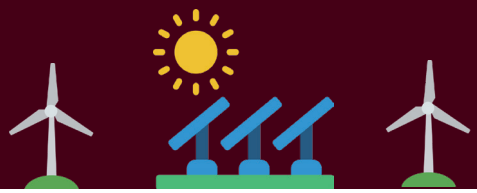
6 Needs

There are several important needs for the sustainability of the cooperative. First, additional financial resources need to be provided. Utilizing national and European Union funds will be critical for the development of projects. In addition, removing legislative barriers and resolving disputes with distribution companies will ease the financial burden. Increasing transformer capacity is important to reach the targeted energy production level. Investments need to be made in technical improvements to use resources more efficiently and increase energy efficiency. In addition, increasing the education level of members and strengthening cooperation with local governments will contribute to the more efficient operation of the cooperative. These steps will increase the sustainable energy production capacity of the cooperative.

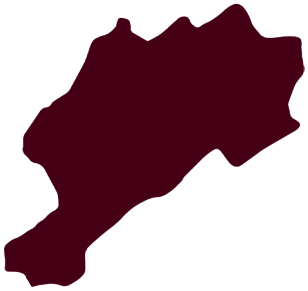
Kayseri Furniture Makers Cooperative has become a successful initiative with the aim of providing economic benefits to its industrial site members and producing environmentally friendly energy, and has proven its technical capacity by switching to electricity production with quality solar panels.

Transformer capacity problems, high debt burden, inadequate local government support and lack of training among members make it difficult for the cooperative to grow and use its full potential.

KULAK VILLAGE RENEWABLE ENERGY COOPERATIVE



102 Members



Clean Energy in Rural Areas for Strong Futures

Afyonkarahisar

Establishment & Mission

Kulak Village Renewable Energy Cooperative, in 2019, within the framework of Orköy (a joint project of the General Directorate of Forestry and the United Nations Development Program (UNDP)), the Cooperative offers an environmentally friendly energy model by using 100 kW capacity PV systems installed on an area of 1500 m². The main mission of the Cooperative is to provide support to low-income households and vulnerable groups, and to increase the use of renewable energy resources in rural areas. In this way, it is aimed to provide social benefit by achieving sustainable energy production.

1

2

The cooperative has faced various challenges brought by new legislation and regulations due to being one of the first energy cooperatives in Türkiye. The fact that the energy transformers in the region are full, and requests for power increases have been rejected. In addition, negative perceptions of energy cooperatives and difficulties in gaining public trust limit the cooperative's growth and impact. The lack of training and counseling centers has hindered capacity development.

Challenges

Financing

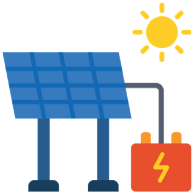
The financing of Kulak Village Renewable Energy Cooperative was provided entirely by grants provided by the General Directorate of Forestry and the United Nations Development Program (UNDP) during its establishment. The cooperative did not request any additional financing after this initial support. 30% of the income from electricity production is directed to the cooperative members, while the rest is allocated for reinvestment. Since the state does not have a special price application for energy cooperatives, standard energy prices apply.

3

4 Members & Social Ties

Kulak Village Renewable Energy Cooperative operates with 102 partners. Membership in the cooperative requires a minimum of two years of village residence, and this practice ensures that villagers are given priority. Members are regularly informed through general assemblies held at the end of the year; interaction between members is provided through traditional methods such as mosque announcements and digital tools such as WhatsApp groups, taking into account the elderly population. Although the level of communication and trust between partners is high, the cooperative's cooperation and support mechanisms with external stakeholders remain limited.

5 Technical Perspective



The PV panels (photovoltaic) used have been selected in accordance with technical specifications and produce environmentally friendly energy with an installed capacity of 100 kW. However, the full capacity of the energy transformers in the region and the lack of infrastructure prevent further energy production. While the cooperative receives technical maintenance service from a contracted company for the efficient operation of the energy systems, panel cleaning is carried out seasonally by the villagers.

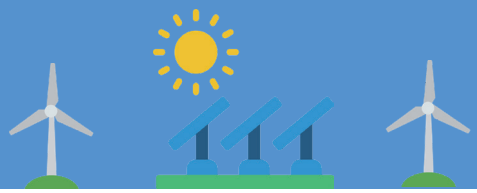
6 Needs

Legal regulations and incentives specific to renewable energy cooperatives should be developed. In rural areas, there is a need for centers that will provide technical support and consultancy services. In addition, cooperatives need to unite under one roof and create a stronger voice and be effective in legal authorities.

The Kulak Village initiative represents the hopeful energy of rural communities seeking sustainable alternatives.

Yet, it highlights the urgent need for institutional support tailored to the realities of small-scale, village-based cooperatives.

MUĞLA KARYALIYAR RENEWABLE ENERGY PRODUCTION COOPERATIVE



16 Members

Muğla

Energy Independence

Establishment & Mission

Muğla Karyalılar Renewable Energy Production Cooperative was established in 2018. Establishment of new cooperatives in Aydın, Denizli and Muğla (Ayden) regions is limited and participation in existing cooperatives is encouraged. The mission of the cooperative is to promote individual energy independence and to make renewable energy sources available. The goal is to increase environmental sustainability and social participation while providing support to households suffering from energy poverty.

1

2

The cooperative experienced difficulties in terms of land acquisition and financing during the establishment process. The land allocation promised by local governments could not be completed, which prevented the cooperative from establishing infrastructure and producing energy. Although the financing was provided by the members' own resources, additional financial support could not be provided for the cooperative to grow and expand its projects. The change in legislation in 2019 was another important reason that prevented it from implementing its projects. Negative perceptions of energy cooperatives and low digital literacy negatively affected communication.

Challenges

Financing

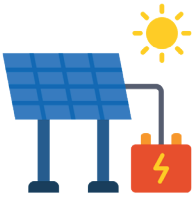
Regularly collected dues from the members were used to sustain the activities. It was aimed to generate income through the sale of excess energy to the state. However, changes in regulations made this process difficult. Methods such as micro donations, zero-interest loans and national/EU funds were considered, but could not be implemented. In addition, another difficulty encountered in their financial processes was that they were subject to a VAT penalty; this situation negatively affected the financial balance of the cooperative.

3

4

The cooperative was established with 7 people and has reached 16 partners. In order to provide technical information and support, cooperation was established with Milas Municipality and consultancy services were provided to other cooperatives in the region. Partners supported the activities of the cooperative by taking responsibility according to their areas of expertise.

Members & Social Ties



Technical Perspective

The cooperative aimed to meet the technical requirements thanks to the partners specialized in solar energy systems. Renewable energy projects were concretized by calculating the costs with simulations and feasibility studies. These studies were an important step to realize the ideals of the cooperative.

5

6

The cooperative needs financial support to continue its activities. New solutions and agreements regarding land acquisition are of great importance for the projects to progress. Legal support to be provided through legislative innovations will accelerate the establishment process. The cooperative should cooperate more actively with local governments and conduct joint studies to strengthen local support and the cooperative understanding. In addition, training programs should be organized to increase the level of digital literacy and improve information sharing. It is also of great importance to raise awareness of the local population about renewable energy and to provide more information about the cooperative's activities.

Needs

Their cooperation with the municipality and providing consultancy services to other cooperatives in the region have strengthened the cooperative's local ties.

Insufficient financial resources and regulatory changes have hindered the progress of projects.

NİLÜFER MUNICIPALITY AND ENERGY COOPERATIVES

Cure for Energy Poverty

Bursa

1 Establishment & Mission

Nilüfer Municipality and Energy Cooperatives were established in 2016 through residential subscriptions of 500 municipal employees. Municipal employees and members of the Chamber of Electrical Engineers played an active role in the establishment of the cooperative. Although innovative options such as wind energy were initially considered, it was decided to focus on solar energy systems due to local conditions and infrastructure constraints. The cooperative aims to create a model where citizens can produce their own energy. It is aimed that this model will both reduce the energy costs of individuals and contribute to the fight against global warming.

2 Challenges

The cooperative has encountered many difficulties due to the inadequacy of legislation and technical infrastructure in Türkiye. In particular, due to legal restrictions in collective energy production, high distribution costs resulting from the distance between energy production points and consumption points have made the economic sustainability of the project difficult. The lack of sufficient support for cooperative initiatives at the national level has hindered the efforts of Nilüfer Municipality in this area and prevented the cooperative from moving to the production phase.

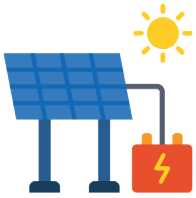
3 Financing

The initial financing required for the establishment of the cooperative was provided by municipal employees' own resources. However, this financing was only sufficient for the beginning, and additional financial support could not be provided for the cooperative to grow and expand its projects. Membership fees and municipal partnership played an important role in providing financing. A portion of the income obtained was allocated to social assistance and aimed to provide support to low-income families. However, high-cost technical problems encountered in the project prevented the creation of a concrete income model. In order to avoid liquidation, the cooperative continues its activities with minimum cost.

4

Nilüfer Municipality played an influential role in the project process. The cooperative was established through the residential subscriptions of approximately 500 municipal employees and the municipality became a partner in this cooperative. In addition, 10 separate cooperatives, each with 1000 people, were established, aiming for a total of 10,000 people. The municipality's work with professional chambers and academic institutions strengthened the social dimension of the cooperative. Combating energy poverty was determined as one of the cooperative's primary goals, and it was planned to support low-income households.

Members & Social Ties



Technical Perspective

The cooperative took an important step towards establishing a wind energy plant by finding a 7-8 acre land in Çardak district of Çanakkale. However, the tenders were cancelled due to incompatibility with the current legislation, which prevented the cooperative from advancing its wind energy project.

5

6

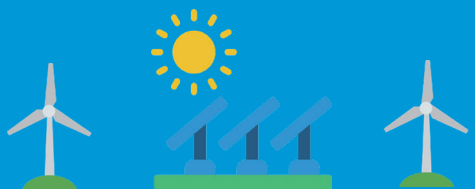
In order for the cooperative to work more effectively and achieve its goals, the legislation needs to be renewed and the requirement for consumption aggregation needs to be lifted. This regulation will provide cooperatives with sufficient space for their own purposes. In addition, more active support from the public and private sectors to overcome the financial inadequacy of cooperatives will help cooperatives overcome capacity and distribution cost problems. In addition, applicable projects should be developed to provide energy support to low-income households in the fight against energy poverty.

Needs

Nilüfer Municipality's energy cooperative initiative shows that local governments can be pioneers in the transition to renewable energy.

Regulatory changes and high distribution costs have prevented the initiative from reaching its full potential.

TURAN RENEWABLE ENERGY COOPERATIVE



Şanlıurfa

Step by Step to Generating Clean Energy

1 Establishment & Mission

The cooperative was founded in 2015 by Abdulsamed Turan in Aynalı Village, Haliliye district of Şanlıurfa. The main purpose of the cooperative is to generate electricity using biomass resources (such as cotton, wheat and corn stalks) and to make this production beneficial for both the villagers and the national economy. However, since there was not enough information and guidance in this area, the cooperative had to manage this process on its own. The long duration of bureaucratic processes constituted a significant obstacle in the establishment phase of the cooperative, and critical processes such as land allocation were resolved with Abdulsamed Turan's personal efforts and resources. The cooperative's operating model is based on meeting the energy needs of its members and generating tangible income with excess energy.

2 Challenges

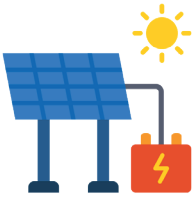
The establishment and development of the cooperative had to proceed on its own due to the lack of sufficient information and guidance, and bureaucratic errors were made in the process. These errors caused both the establishment process to slow down and the founders to find themselves in a difficult financial situation. In addition, the lack of technical infrastructure and experts in the region was another important factor that hindered the development of the cooperative. The cooperative faced threats to its sustainability due to insufficient financial support and legal regulations.

3 Financing

The establishment costs of the cooperative were largely covered by the founding partners' own resources. Although support was sought through European Union projects, the desired financing could not be provided. For this reason, the cooperative went through a difficult period financially and the facility could not start operating as planned.

4 Members & Social Ties

The cooperative was initially established with 20 people from the circle of relatives, and most of the founding partners contributed their financial savings to this project. Due to the lack of knowledge of the local people on the subject, the number of members did not increase over time and the cooperative remained constant at 20 people.



5 Technical Perspective

Land supply was provided by the partners' own means. Biomass energy was initially considered for the energy project in the region, but in line with the information obtained during the process, it was decided that solar energy was more logical. Despite this, the production phase could not be started due to the lack of technical support for both types of energy.

6 Needs

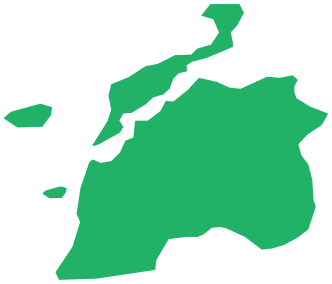
The most basic need of the cooperative is professional guidance and technical consultancy support. In addition, additional financing resources should be used through European Union projects that will support the project. It was emphasized that energy cooperatives should unite under one roof in order to become stronger and more effective.

Turan Renewable Energy Cooperative set out with the aim of utilizing local resources and contributing to rural development, and has demonstrated a strong initiative with the dedication of its partners.

Due to lack of technical knowledge, bureaucratic obstacles, insufficient financial resources and unexpected events, the cooperative could not realize its full potential.

TROYA RENEWABLE ENERGY COOPERATIVE

26 Members



Çanakkale

Support for Small Businesses

Establishment & Mission

Troya Renewable Energy Cooperative was established in 2017 with 8 founding partners and later reached 26 partners. The cooperative's founding purpose was to produce renewable energy as an alternative to the thermal power plants planned in the Çanakkale region. The cooperative aimed to bring people from different age groups and social positions together, and care was taken to ensure that women were at the forefront of management.

1

2

Challenges

The experiences of the Troya Energy Cooperative reveal the fundamental challenges that energy cooperatives face. Legal changes during the application process negatively affected investment plans and prevented the cooperative from producing. Infrastructure deficiencies, especially low transformer capacity and connection problems, made it difficult for the cooperative to establish its own systems. Lack of financial resources and difficulties in accessing grant support also threatened the sustainability of the cooperative, and as a result, the decision was made to close its activities in 2023.

Financing

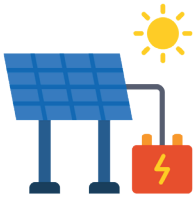
The cooperative was initially financed by members' dues and equity. However, since production could not be started, project-based grants or funds could not be used. Although grants from institutions such as TKDK were useful, access to financing sources appropriate to the cooperative's needs could not be provided. In addition, no additional financial support could be received from local governments or municipalities.

3

4

The cooperative has a qualified partner profile consisting of different professional groups (engineers, lawyers, accountants, etc.) and various specializations. Various events and information meetings have been organized to raise awareness among the local population. In addition, contacts have been established with energy cooperatives abroad and it has become the only energy cooperative in Türkiye that is a member of RES-coop (a federation of renewable energy cooperatives in Europe).

Members & Social Ties



Technical Perspective

The cooperative could not start production due to technical infrastructure deficiencies and especially low transformer capacities. New technology solar panels and storage systems were planned to be installed and research was conducted in this area. Although technical experts were worked with, no concrete results could be obtained due to changes in legislation.

5

6

There is a need for stable and supportive legal regulations that will pave the way for cooperatives. Frequent changes in legislation damage the trust of cooperatives and make long-term planning difficult. In order to achieve effective energy production, the infrastructure deficiencies of distribution companies need to be addressed and transformer capacities need to be increased. More financial grants, funds and local government support should be provided. In addition, it would be beneficial to establish a consultancy center or support unit that will facilitate cooperatives in finding solutions to the technical problems they encounter. Such a structure will contribute to the provision of a sustainable production process.

Needs

Troya Renewable Energy Cooperative was established with qualified partners from different professional groups, encouraged women to take part in management, carried out awareness-raising activities in the local community and aimed to develop innovative solutions by establishing contacts with international energy cooperatives.

Due to problems such as lack of financing, legislative changes, technical infrastructure deficiencies (especially transformer capacities) and inability to start production, the cooperative had to be liquidated in 2023.

YILDIZ SPP ENERGY COOPERATIVE

7 Members

Çorum

Support for Small Businesses

Establishment & Mission

Yıldız Solar Power Plant Renewable Energy Cooperative was founded in Çorum by 7 entrepreneurs in 2018. Land was provided for solar energy production planned to be established in the organized industrial zone. The mission of the cooperative is to reduce the costs of small businesses by producing their own energy, as well as to provide support to low-income individuals.

1

2

The changes in legislation made during the establishment process of the cooperative were the main reason why they could not move on to the production phase. In addition, small businesses could not provide the necessary capacity to produce because the low transformer capacity in the region was filled by large energy companies.

Challenges

Financing

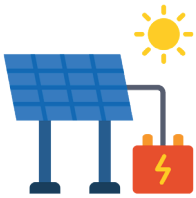
The cooperative's capital was provided only from the members' own resources, and additional financing sources were needed to implement the projects and ensure sustainability. In this context, the funds provided by TKDK (Agricultural and Rural Development Support Institution) for small businesses were seen as an opportunity for the establishment of the solar energy facility targeted by the cooperative. However, the process of benefiting from these funds was not completed successfully and the cooperative's projects did not progress.

3

4 Members & Social Ties

The partners of the cooperative are EPC (Engineering, Procurement and Construction) companies and have significant experience in solar energy plant construction, including electrical engineers. In order to become a partner of the cooperative, individuals must have an energy consumption point commercially. In addition, collaborations have been established with local governments, chambers of tradesmen and chambers of agriculture, and thus the cooperative's field of activity has been expanded, aiming to contribute to local development and sustainable energy production.

5 Technical Perspective



The presence of electrical engineers among the partners and the presence of EPC (Engineering, Procurement and Construction) companies provide the cooperative with easy access to the necessary engineering services and infrastructure for its projects. These advantages increase the cooperative's potential to succeed in solar power plants and other energy projects and support the efficient progress of the projects.

6 Needs

It was emphasized that more incentives should be provided for small businesses to reduce their energy costs. It was stated that local governments and chambers should take a more active role and support cooperatives. It was stated that a similar model should be implemented in the agricultural sector, and the importance of cooperatives to reduce energy costs in areas such as agricultural irrigation was emphasized.

Yıldız Solar Power Plant Cooperative has made a strong start with its technical know-how and vision of supporting small businesses, and has built its technical infrastructure on a solid foundation with the leadership of electrical engineers.

Legislative changes, lack of financing, public distrust of cooperatives, and bureaucratic obstacles have made it difficult for cooperatives to grow and be sustainable.

POLICY RECOMMENDATION: STRATEGIC STEPS TO STRENGTHEN RENEWABLE ENERGY COOPERATIVES IN Türkiye

Renewable energy cooperatives offer an important opportunity for Türkiye's energy independence, local development and environmental sustainability. However, current structures face many legal, financial, technical and social obstacles. This policy proposal offers solutions under six strategic headings to support the development of energy cooperatives in Türkiye.

1. Simplification of Legislation

One of the biggest obstacles to the development of energy cooperatives is the frequent and uncertain legislative changes. The "consumption aggregation" principle introduced in 2019; allows only consumers in the same tariff group and with a common connection point to come together, while it imposes restrictions on the aggregation of consumers in different tariff groups. This regulation has weakened the production-consumption structure by reducing the flexibility of cooperatives. Revising this principle in a cooperative-friendly manner is critical for improving the investment environment and encouraging entrepreneurship. Stability in legal regulations should be ensured, enabling cooperatives to make long-term plans.

2. Development of Public and Private Financing Mechanisms

Establishing and operating energy cooperatives requires high initial costs. Cooperatives should have access to low-interest credit programs in public banks, financial incentives from local governments and cooperation with the private sector. In addition, technical guidance mechanisms that facilitate access to international support such as EU funds and IPARD should be developed. It is recommended that special financial support programs be established, especially in rural and vulnerable regions.

3. Establishment of Local Energy Consulting Centers

The technical and bureaucratic difficulties faced by cooperatives stem from lack of access to information. Local energy consultancy centers to be established in each province will increase the capacity of cooperatives by providing guidance on legislation, project development,

engineering and finance. These centers can also lead the way in experience sharing, mentoring and capacity building processes.

4. Establishment of the Supreme Union (Confederation) Structure

A superstructure should be established to represent energy cooperatives at the national level, to establish an effective dialogue with policy makers and to operate joint advocacy mechanisms. A confederation such as the "Energy Cooperatives Union" would strengthen cooperatives, develop legislative proposals and facilitate their integration with similar networks in Europe (e.g. RES-coop.eu).

5. Encouraging Active Participation of Local Governments

Providing technical and financial support to energy cooperatives by local governments increases local ownership and sustainability of cooperatives. Municipalities should be integrated into cooperative processes through methods such as roof and land allocation, evaluation of public buildings within the production-consumption model, and direct partnerships. These collaborations should be seen as part of local energy plans and supported.

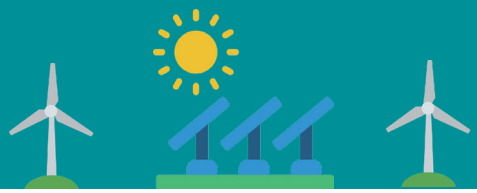
6. Social Awareness and Participation Campaigns

It should be emphasized that energy cooperatives have missions not only for energy production but also solidarity, environmental responsibility and social justice. Targeted training, campaigns and field studies should be carried out for the active participation of women, youth and energy-poor groups in these structures. Social ownership can be increased through awareness-raising activities to be carried out in villages, schools and through NGOs.

Conclusion

Energy cooperatives have great potential to pave the way for participatory and democratic energy production at the local level. The realization of this potential will be possible through the systematic implementation of the policy recommendations presented above. Legislation, financing, organization and society as a whole need to be prepared for this transformation.

RECOMMENDATIONS FOR COOPERATIVES



1. Strengthening the Community-Based Approach
Cooperatives are not only a technical or economic structure, but also a social solidarity area. Regular communication with members, democratic decision-making processes, voluntary committees and working groups should be used to ensure active participation of members. These approaches, which strengthen the sense of belonging, ensure that decisions are adopted and the cooperative is long-lasting.

2. Establishing Strong Relations with Local Stakeholders
Energy cooperatives should be part of a multi-actor structure at the local level. Strategic partnerships with municipalities, muhtars, universities, civil society organizations and local tradesmen both increase local legitimacy and provide support in project processes.

3. Creating Member Training Programs
Increasing the knowledge level of cooperative members is critical for effective participation in decision-making processes and the development of a common vision. Regular and participatory trainings should be planned on topics such as renewable energy systems, energy efficiency, legislation and cooperative principles; these trainings should be supported by field applications.

4. Professional Support and Technical Capacity Building
Lack of technical knowledge is the main obstacle most cooperatives face during the project development phase. External experts should be worked with on issues such as project preparation, engineering solutions, feasibility reports and financial planning; if possible, a project coordinator, technical consultant or energy manager should be employed.

5. Encouraging Women and Youth Participation
Having an inclusive structure in cooperatives both increases social impact and includes the contribution of all segments of society in the process. Positive discrimination practices should be developed for women and youth to take active roles in management boards, technical teams and field work, and structures such as youth and women's commissions should be established.

6. Developing Energy Efficiency and Saving Projects
Energy cooperatives should take responsibility not only on the production side but also on the consumption side. Energy saving trainings for members, encouragement to use efficient appliances, and technical guidance on home insulation should be encouraged.

7. Following Good Practice Examples and Participating in Networks
Cooperatives should strengthen the sharing of knowledge and experience among themselves. Membership in national and international networks should be ensured, and good practice visits abroad should be organized.

8. Focus on Transparency and Trust Building
Transparency is vital to reinforce the sense of trust in cooperatives. Financial reports, meeting decisions, project developments and management processes should be shared with all members regularly.

RENEWABLE ENERGY COOPERATIVES OF TÜRKİYE

GLOBAL GREENGRANTS FUND

TROYA ÇEVRE ENVIRONMENTAL ASSOCIATION