



Evaluation of the Possible Effects of the European Green Deal Process on Agricultural Policies in Türkiye

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ABSTRACT

The European Union (EU) not only carries out some studies to ensure economic and social development but also frames policies to find solutions to emerging problems both within its borders and concerning the countries. The most important and recent of these policies is the European Green Deal, which is also intended for the agricultural sector and many others to tackle global warming and climate change better. This concept is on the agenda as the EU has made the Deal mandatory due to adverse circumstances such as an unprecedented pandemic, climate change, and droughts. One of the most important topics within the scope of the Deal is "From Farm to Fork": for a fair, healthy, and environmentally-friendly food system. Farm to Fork aims to make food systems fair, healthy, and environmentally friendly. Considering its relations with the

EU, Türkiye has started to create several arrangements in its policies in line with this title. However, since academic studies on the effects of the Deal on agriculture are limited, this study has been mainly conducted to address this shortcoming. Therefore, this review aims to evaluate the possible impacts of the Deal process developments within the framework of Türkiye - EU economic relations, especially in the agricultural sector. In conclusion, the Deal will not only offer solutions to climate change but also secure a lot of support for the development and growth of economies. Türkiye should make good use of these assets within the framework of a win-win approach. Türkiye should see the Deal as an opportunity for transition into a low-carbon economy in the context of agriculture and climate change.

Keywords: European Green Deal, Farm to Fork Strategy, agricultural policies, cohesion, Türkiye, European Union

1. Introduction

The European Commission has expressed its commitment to tackling these environmental challenges in the context of global warming, climate change, the risk of species extinction, pollution, and the destruction of forests and oceans. At this point, European Green Deal (EGD) has been introduced to respond to these challenges. The EGD is a new growth strategy aiming to transform the European Union (EU) into a just and prosperous society with a modern, resource-efficient, and competitive economy without net greenhouse gas emissions and where economic growth is decoupled from resource use by 2050 (Anonymous 2019a).

The EGD, put forward by the European Commission on 11.12.2019, aims to decarbonize Europe by 2050 as the EU's long-awaited final climate action plan. For this purpose, it envisages a radical transformation in the economy and achieving climate neutrality (harmlessness) in the European continent (Ecer et al. 2021). Following Europe's footsteps; China and Japan announced carbon-neutral deadlines in September 2020. In addition, Joe Biden, who is the current president of the United States of America (USA), made the USA a party to the Paris Agreement first thing when he came to power in January 2021 and announced an incentive package afterward whose content revealed the size of the business globally (Aşıcı 2021a).

The EU intends to be a climate-neutral continent by 2050 with the EGD to zero its net greenhouse gas emissions, protect employment and industrial production, and become an influential player in reducing global greenhouse gases (Uçak & Villi 2021). In this targeted

direction, it has also expressed that it plans to reduce net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. The EGD is the economic transformation model to be used as a roadmap to achieve this goal (Diriöz 2021).

As far as innovation and competitiveness for the development of climate-compatible technologies, a healthy and fair food system with the Farm to Fork Strategy, and the Fair Transformation Mechanism designed to “leave no one behind” are concerned, it is seen that the EGD includes policy areas such as economy, employment, health, food, social justice as well as ecology (Aşıcı 2021b).

The EGD offers an action plan on issues such as investing in eco-friendly technologies, supporting industry for innovation, and decarbonizing the energy sector to increase the efficient use of resources by switching to a clean, circular economy, restoring biodiversity, and reducing pollution (Kandemir 2021). The EGD has emerged intending to meet the EU’s vision of a standard “green growth” strategy; the definition of “reaching climate neutrality on a continental scale” is used for this Deal. The EGD is based on political, legal, and economic processes that center on international cooperation (Çayırbaş & Sakıcı 2021).

In addition to the Paris Climate Agreement, which Türkiye has signed, Türkiye’s Medium-Term Program (2022-2024) also includes the issue of green economy adaptation and transformations within the scope of the EGD (Anonymous 2022a). Therefore, it can be said that the beginning of an application that would mean a policy change in Türkiye’s transformation into a green economy has been made.

In addition to these, the fact that one of the most important partners of Türkiye in terms of foreign trade is the EU also reveals how significant and at the forefront this issue is. Therefore, there is a potential to create a substantial and new additional financial burden on exports to EU countries, especially if the necessary harmonization measures are not taken due to the border carbon regulation within the EGD.

The EGD is designed not only for improving people’s health, quality of life, and taking care of nature but also for tackling climate change, a roadmap, and a Strategy for achieving economic growth by doing all this. One of the EGD’s key topics is the “From Farm to Fork” strategy: for a fair, healthy, and environmentally-friendly food system.” Having mapped out 20.5.2020, it is directly related to the agricultural sector. Nowadays, food systems that account for approximately one-third of global greenhouse gas emissions consume large amounts of natural resources and cause biodiversity loss and adverse health effects. Therefore, they need to be redesigned. Farm to Fork Strategy is described as the EGD, which aims to make food systems fair, healthy, and environmentally friendly (Anonymous 2022b).

With this Strategy, it is clearly stated that the sustainable regulation of food systems will also bring inspiring opportunities for businesses in the food value chain. Moreover, it is evident that new technologies and scientific developments plan to benefit all stakeholders and increase public awareness and demand for sustainable food. Thanks to this Strategy, the EU also plans to support the global transition to sustainable agri-food systems through trade policies and instruments of international cooperation.

Considering Türkiye’s entry into the EU and the harmonization process between them, it will be inevitable for Türkiye to make arrangements in the relevant policies within the framework of the EGD rules. There are basically eight titles in the EGD. One of these titles, which is directly related to the agricultural sector, is “From Farm to Fork”: for a fair, healthy, and environmentally-friendly food system. In addition to this title, “increasing the EU’s climate target for 2030 and 2050” and “protecting and improving ecosystems and biodiversity” are other ones that can be considered in connection with the agricultural sector.

Considering that EGD policies have just begun, it can be said academic studies on this subject have just started. When the studies on the EGD are discussed in detail, it is seen most publications debate the political aspect and general scope of the process. Although the studies aim to draw a framework for climate change, circular economy, and the energy sector, academic publications and evaluations on agriculture on a sectoral basis seem to be limited. This lack of research has been the main focus in the initiation of the study.

This article is prepared to evaluate the process of EGD in terms of Türkiye, focusing on the strategies in the agricultural sector in the EGD. Besides these, when Türkiye-EU relations are considered, it becomes essential for Türkiye, which is in a strategic market, to define the implications and effects of the EGD concerning the whole world and to evaluate within the framework of these effects. This study will be able to contribute to filling this gap (lack of relevant studies evaluating the literature) with the strategies drawn up for the agricultural sector and their implementation.

This study has been prepared based on the literature. The obtained works of literature were evaluated, interpreted, and synthesized in terms of Türkiye-EU agricultural policies within the framework of the EGD. Based on these determinations, the study aims to assess the possible effects of the developments in the EGD process within the framework of Türkiye - EU economic relations, especially in the agricultural sector, and to offer suggestions on what measures are to be taken in the sector in this context.

2. European Green Deal

The crippling effects of environmental problems such as global warming, climate change, increasing air pollution, the gradual decrease in biodiversity, and the gradual depletion of natural resources have been deeply felt, especially since the 1990s. The adverse effects of economic growth and development on the environment and the relationship between the environment and energy have been the subject of intense debate in parallel with those issues on international platforms. However, in recent years, with the effect of environmental pollution and global warming, the search for severe alternatives to understanding economic growth and development has accelerated, even if not to capitalism and the free market system. The new green paradigm should be seen as a result of these alternative searches (Yalçın & Gök 2021).

There are renewable energy sources such as natural gas, which emits less carbon, and green energy, which does not emit any carbon at all, in place of coal and oil, which were used as energy sources in the period that can be called the old world. In this context, putting itself at the focal point of the world, the EU has even taken the world's leaders on the EGD, which has been put into effect on the issues of combating global warming and climate change. Therefore, it's fair to say that the EGD has emerged as one of the most significant agreements adopted by the EU.

With the EGD, the EU has announced its ambitious roadmap regarding climate change for the next 30 years. Moreover, the EGD should not be seen as just a climate policy. It also outlines reshaping the economic transformation on the axis of climate change. Policies and actions within the scope of the EGD set new targets and practices in many areas, from energy to transportation, industry to agriculture, and financing mechanisms to social life. The EGD is seen as both a new growth strategy and an economic model within the framework of green growth. This EGD is about improving people's well-being while setting out the objectives of making Europe climate neutral and protecting its natural habitats as part of its new growth strategy. In this context, it follows an approach that plans to make Europe climate neutral by 2050, reduce pollution, protect human life, animals and plants, help companies become world leaders in clean products and technologies, and help ensure a just and inclusive transition (Anonymous 2019b).

The EU has revealed its projects to reduce carbon emissions by 50% by 2030 and to reduce it to zero (the first climate-neutral zone in the world) by 2050 with the EGD and with the climate law enacted on 29.7.2021 and these targets have become binding for the Member States and the EU (Gönen & Uzun 2021).

In general terms, these policy changes are listed in Figure 1 (Anonymous 2019a). Figure 1 fully illustrates the different elements of the EGD.

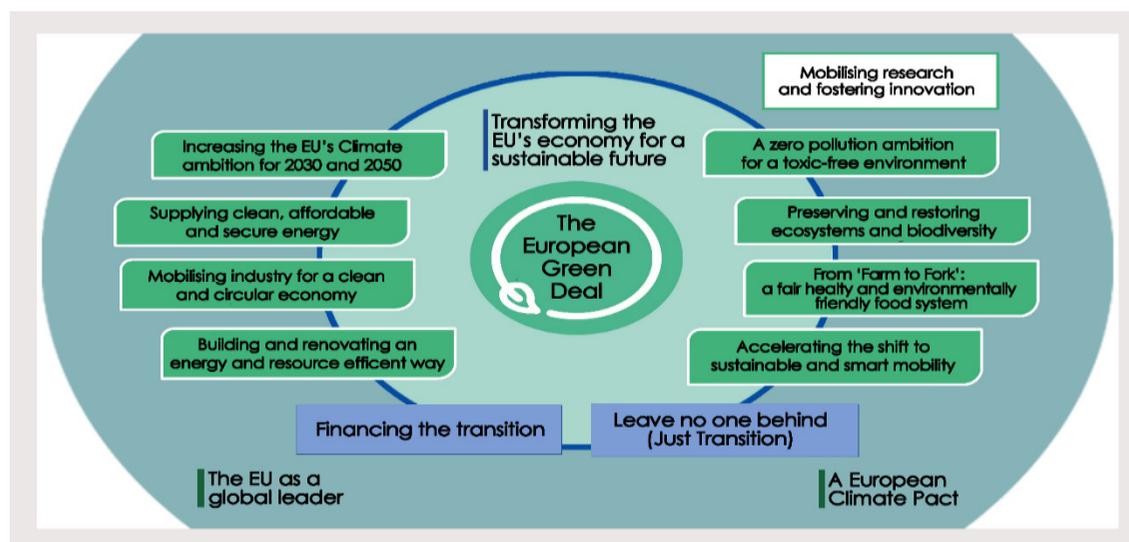


Figure 1. General Framework of the EGD (Anonymous 2019a)

All regions and sectors within the EU will need funding resources to fulfill the rules of this EGD. Although the EGD Investment Plan will respond to this need, the Just Transition mechanism will also allocate at least 100 billion Euros in the 2021-2027 period in the regions most affected by this EGD (Anonymous 2020a). Moreover, The EGD has also been expressed as an essential point of recovery from the coronavirus disease-2019 (COVID-19) pandemic, and it has been stated that one-third of the 1.8 trillion Euro investment within the scope of the Next Generation EU Recovery Plan and the seven-year budget of the EU will be financed by the

EGD (Anonymous 2022c).

The EU has implemented many measures, especially climate law and carbon border tax, in conjunction with the EGD. In addition to these measures, various transition funds have simultaneously been created for companies to switch to green energy and move away from fossil and carbon-based energy and fuel. The size of the funds allocated by Europe for environmental projects over the next ten years is over one trillion dollars. This amount of funding constitutes the enormous amount put forward for regulation on climate change in the history of the world and the EU (Uçak & Villi 2021).

Thirty percent of the long-term budget and Next Generation EU will be spent on fighting climate change-the highest share ever, from the most extensive EU budget ever. These funds are part of an effective investment plan the EU will implement to green the economy (Anonymous 2021a). The Next Generation EU is an €806.9 billion temporary rescue measure to help repair the immediate economic and social damage caused by the coronavirus pandemic. As a result, it is stated post-COVID-19, Europe can be greener, more digital, more resilient, and better suited to current and future challenges (Anonymous 2022d).

These funds are part of a significant investment plan the EU will implement to green the economy. This long-term budget will combine EU and national public funds and public and private investment to support the EU on its path to climate neutrality by 2050. Besides these, an additional €15 billion will be earmarked for the European Rural Development Fund in conjunction with the European Investment Bank and Common Agricultural Policy (CAP) to support rural areas in making the necessary structural changes in line with the EGD and achieving targets in line with the new biodiversity and Farm to Fork Strategies (Anonymous 2021a).

Considering the economic potential of the EU throughout the world, the decisions and policies taken in conjunction with the EGD may become challenging for all countries with commercial, financial, and political relations with the EU. To successfully Deal with the issues included in this EGD, which the EU has put into practice, it is paramount to include other countries. The EU establishes relations with many countries and regions worldwide in this context. As far as the EGD is concerned, it is stated that “as long as other countries do not share the same passion with the EU on a global scale, there will be a risk of an increase in carbon emission levels” and added that success would come as a result of joint efforts (Anonymous 2019a).

When the trade volume and economic and political intense relations between Türkiye and the EU are evaluated, Türkiye, which has close relations with Europe, should seriously consider the issues concerning the agricultural sector. Considering these aspects, Türkiye - EU relations may also be affected by these changes.

3. Evaluation of the Agricultural Policies in the Scope of the EGD

After the EGD was announced on 11.12.2019, which concerns agriculture and all other sectors, the EU took it to the next level by integrating environmental and climate change elements into other policy areas. Furthermore, following the announcement of the EGD, the EU has published a series of sub-strategies that establish links between it and other sectors. One of them was the “From Farm to Fork Strategy”, published on 20.5.2020, and found the connection between the agricultural sector and the EGD (Akyüz 2021).

The Farm to Fork Strategy is one of the most critical issues of the EGD within the framework of a new growth target shaped by improving the living standards of individuals, being more sensitive to the environment, and having an integrative understanding. The Farm to Fork Strategy, as a new and comprehensive approach to the value Europeans place on food sustainability, comprehensively addresses the challenges of sustainable food systems and recognizes the essential link between healthy people, healthy societies, and a healthy planet. Creating a suitable food environment that facilitates choosing a healthy and sustainable diet will benefit consumers’ health and quality of life while reducing health-related costs for society (Anonymous 2020b).

As the EU moves toward a healthier and more sustainable food system with the Farm to Fork Strategy, which is meant to be the cornerstone of the EGD, the following goals are pursued (Anonymous 2020c);

- Making sure Europeans get healthy, affordable, and sustainable food,
- Tackling climate change,
- Protecting the environment and preserving biodiversity,
- Ensuring fair economic return in the food chain,
- Boost in organic agriculture.

The Farm to Fork Strategy will enable the transition to a sustainable EU food system that maintains food security and ensures access to healthy food sourced from a healthy planet. The EU plans to reduce the food system's environmental and climatic footprint and strengthen its resilience, protecting citizens' health and ensuring farmers' livelihoods. It also proposes many measures for EU citizens, including improved labeling to meet better consumers' needs for information about healthy and sustainable food (Anonymous 2020d).

The targets of the strategy until 2030 have become more definite. These are (Anonymous 2021b):

- Reducing the overall use and risk of chemical pesticides by 50% and the use of more hazardous pesticides by 50%,
- Achieving at least 25% of the EU's agricultural land under organic farming and a significant increase in organic aquaculture,
- Reducing sales of anti-microbials for farm animals and in aquaculture by 50% by 2030,
- Reducing nutrient losses by at least 50% while ensuring no deterioration in soil fertility, which will cut down the use of fertilizers by at least 20%,
- Bringing back at least 10% of agricultural area under high diversity landscape features.

When the details of the specific targets given above under the main headings are examined, it is seen separate targets are determined for each title. For example, pesticides and fertilizers are particularly important in the Farm to Fork Strategy. The Commission will take some precautions to protect farmers' incomes and create alternatives such as reviewing the sustainable use of pesticides directive, the carbon farming initiative, and the certification of carbon removals that should create new business models and reward those farmers and foresters that adopt more climate-friendly practices.

Together with the Member States, the Commission will promote the recycling of food as fertilizer from organic waste, which will develop an integrated food management action plan to reduce and prevent pollution from the overuse of fertilizers. This could contribute to delivering the "zero pollution ambition" of the EGD. In addition, the new regulations on veterinary medicinal products and medicated feed to be implemented in 2022 will provide a wide range of measures to limit the use of anti-microbials in animals further and encourage their cautious and responsible use (Anonymous 2020e).

To accomplish the goals of organic agriculture, it is vital to ensure not only the sustainable economic development of the sector but also to encourage the demand. Therefore, the Commission will put forward an action plan on organic farming in addition to CAP measures such as eco-plans, investments, and advisory services. This will be an opportunity to revive both the supply and demand for organic products. At the same time, this could contribute to gaining consumer trust through promotional campaigns and green public procurement. Furthermore, aiming to achieve the UN Sustainable Development Goal, the Commission will propose legally binding targets to diminish food waste across the EU by 2023. Moreover, the Commission will consider additional opportunities as part of relevant EU policies to integrate food loss and waste prevention and take action to strengthen the evidence base for food waste prevention interventions (Anonymous 2020e).

Farm to Fork Strategy will be able to put forward actions to help consumers choose healthy and sustainable diets. In particular, the Commission will explore new ways to give consumers better information on the nutritional value of foods (Anonymous 2020f). In addition, to enhance the availability and price of sustainable food and to promote healthy and sustainable diets, including organic products, in schools and public institutions, the Commission will determine the best modalities to adopt minimum mandatory criteria for sustainable food procurement.

The EU is committed to leading by example on the transition to sustainable food systems within its borders and outside. Through international cooperation, bilaterally and multilaterally, the EU will promote more sustainable farming and fishery practices, decrease deforestation, enhance biodiversity, and boost food security and nutrition outcomes. The Commission will incorporate these Farm to Fork priorities in the programming guidance for cooperation with third countries in the period 2021-2027. The EU's bilateral trade agreements also offer a means to foster EU environmental standards in third countries in addition to food safety standards (Anonymous 2020e).

In addition to the objectives mentioned above of the Farm to Fork Strategy, it has been stated that the transition to this process can be achieved by making conscious consumer choices. In this process, it is emphasized that studies can be carried out under sub-headings such as creating a healthy food environment that makes healthy and sustainable choices easy, labeling foods to encourage consumers to pick healthy and sustainable options, and accelerating the fight against food waste, supporting research and innovation and promoting

global transition.

It has been affirmed that the EGD may have some benefits for farmers, which are (Anonymous 2020g):

- Sustainable business models, labeling plans, and marketing standards will link production methods to premium consumer demand, resulting in higher returns for farmers and food producers.
- Tools that will contribute to improving the position of farmers in the food supply chain.
- Changing consumer demand and sustainable new systems by bringing new business opportunities such as the plant protein sector or the bioeconomy.
- Advances in innovation, technology, and digital solutions (precision farming) resulting in higher productivity and lower costs through lower inputs.
- Meeting the increasing demand for sustainable food means making a stronger connection with consumers.
- Labeling and marketing initiatives to heighten awareness of EU high standards, opening up additional export opportunities.

On 15.1.2020, the European Parliament announced its resolution on the EGD, which includes a specific request to the Commission to analyze the contribution of the CAP reform proposal to the EU's environmental, climate, and biodiversity protection commitments to fully align it to the goals set in the EGD (Anonymous 2020h). In line with the CAP and this EGD, for example, Member States will have to use a new tool to encourage farmers to adopt or maintain practices that benefit the environment and climate. To exemplify, one of the priorities of the Farm to Fork Strategy is to help consumers choose healthy and sustainable diets and reduce food waste, which means that Member States should examine their actions and propose how to use the different CAP tools to address any difficulties that may arise.

The Farm to Fork Strategy of the EGD and the EU CAP are closely related to each other. On 2.12.2021, the Deal on reform of the CAP was formally adopted. The new legislation is due to begin in 2023. This new Deal brings a fairer, greener, more animal-friendly, and more flexible CAP. It will seek to ensure a sustainable future for European farmers, provide more targeted support to smaller farms, and allow greater flexibility for EU countries to adopt measures to local conditions. Agriculture and rural areas are central to the EGD, and the new CAP will be a crucial tool in reaching the ambitions of the Farm to Fork strategies (Anonymous 2022e).

It should be stated that the targets set under the new CAP are entirely in line with the EGD, and the national CAP strategic plans will contribute to the EGD targets. Meanwhile, it should be noted that the Farm to Fork Strategy is financially supported through the CAP and the budget for the European Agricultural Fund For Rural Development includes €8 billion from Next Generation EU to help rural areas make the structural changes necessary to achieve the goals of the EGD and the digital transition.

The Commission services are working intensively with the Member States and stakeholders to ensure substantial environmental and climate ambition is achieved through the CAP Strategic Plans. For example, a range of workshops has been co-organized to maximize the potential of the proposed new tools. However, in light of the EGD challenge, the role of the Commission in this preparatory phase needs to be further reinforced (Anonymous 2022e).

It should also be noted that some problems may arise during the implementation of the EGD by the Member States. Some of these vulnerable areas include the problem of food safety and security around the world and its reflections on the EU, the COVID-19 pandemic process, high inflation rates in the EU, the economic problems caused by the Russia-Ukraine war, and the energy crisis (high dependency on fossil fuels) and changes in consumer preferences due to these. Finally, it is stated that there can be some particular issues, such as the need for a large amount of infrastructure in the transition to a Farm to Fork Strategy, the possibility of a decrease in productivity in the first years of the adaptation of the farmers to the new strategy, and the need for new farm equipment.

The implementation of the EGD will require some sort of regional cross-border approach. A climate-neutral continent will require, by definition, cooperation between the EU, the Energy Community, and neighboring countries such as Türkiye. Climate neutrality over time will also raise the issue of (regional) carbon leakage. A regional approach is essential to ensure that the transition co-occurs throughout the region to avoid, for example, the risk that more ambitious countries replace domestic higher carbon electricity production with other carbon-intensive imports from their neighbors. Also, the potential EU climate-neutrality target for 2050 is unprecedentedly ambitious, especially for this region; all Member States will face challenges in delivering the required transformational changes under the EGD (Cătuți et al. 2020).

4. Evaluation of the Türkiye's Agricultural Policies in the Scope of the EGD

Considering Türkiye - EU relations, the EU is one of the most important partners of Türkiye in terms of foreign trade. According to the data provided by "Trade Map" in 2021, The EU is the most important commercial partner of Türkiye, with which 48% of its total exports, 33,6% of its total imports, 29,7% of its total agricultural exports, 19,9% of its total agricultural imports are made. In addition, Türkiye is the 2nd most popular Foreign Direct Investment (FDI) destination after Poland. Despite the severe effects of COVID-19, Türkiye has secured %16 shares of the EU's FDI, and its largest and most significant investment source is the EU. "Türkiye is the EU's 6th largest export partner and a key export market" also shows how close Türkiye - EU relations are (Anonymous 2022f).

It can be inevitable for Türkiye to innovate in its agricultural policies by carefully examining the developments in the EU within the framework of EGD. Otherwise, there could be a high risk of disruption in the commercial agreements and the harmonization process between Türkiye and the EU in the following years due to the issues that directly concern the EU, such as agriculture, climate change, and biodiversity, especially greenhouse gas emissions. Furthermore, it is required to adapt to the new regulations the EGD brought to protect, strengthen and ensure the sustainability of Türkiye's trade relations with the EU, both in agricultural products trade and in other sectors related to agriculture. When it comes to agricultural and food products, which constitute a very considerable part of annual exports, inevitably, the targets set for the agricultural sector with the "From Farm to Fork Strategy" introduced within the scope of the EGD will affect Türkiye's agricultural sector.

The changes envisaged in the policies implemented by the EU with the EGD, the transformation in international trade and the economy, the protection and development of competitiveness in exports in line with Türkiye's development goals, and the relations established within the scope of the EU Customs Union are of great importance in terms of strengthening the contributions to the global economy (Official Journal 2021). From this point of view, inevitably, Türkiye - EU relations may also be affected by these changes. Furthermore, Türkiye needs to make many adjustments in the agricultural policies, which will have to comply with the EGD ones in the foreseeable future. Therefore, compliance with the agricultural sector requirements of the EGD also has an important place in front of Türkiye.

The Green Deal Action Plan was published by the Ministry of Commerce in line with the Presidential Circular No. 2021/15 in the Official Journal numbered 31543 on 16.7.2021. Then, The Green Deal Work Group consisted of the representatives of the Ministries of Labour and Social Security, Environment, Urbanization, and Climate Change, Foreign Affairs, Energy and Natural Resources, Treasury and Finance, National Education, Industry and Technology, Agriculture and Forestry, Transport and Infrastructure was established (Official Journal 2021).

This action plan establishes a framework that sets out the period from 2021 to 2027, aiming to support Türkiye's green transformation in all relevant policy areas (Anonymous 2022g). After the Circular, the Green Deal action plan 2021 document was published by the Ministry of Commerce. The plan emphasizes the need for a holistic approach to the effects of policy changes- especially the EU-on industry, agriculture, energy, and transportation policies in connection with Türkiye's foreign trade and draws a road map that will ensure harmonization by taking Türkiye's Customs Union relationship into account (Ministry of Commerce 2021).

The action plan aims to comply with the regulations and principles adopted under the EGD to contribute to Türkiye's transition to a more sustainable, resource-efficient, and green economy in a way that preserves and advances its current integration (Anonymous 2022g). Türkiye's action plan outlines the actions planned to be carried out under nine headings, including 32 targets and 81 actions. These headings are border carbon regulations, a green and circular economy, green financing, clean, economical, and secure energy supply, sustainable agriculture, sustainable smart transportation, battling climate change, diplomacy, EGD information, and awareness activities (Ministry of Commerce 2021).

Specialized work groups have been established under the coordination of relevant public institutions on various issues to monitor the functioning of the Green Deal Action Plan published by the Ministry of Commerce and to facilitate the coordination of the appropriate parties. One of these work groups is the Sustainable Agriculture Specialization Work Group.

Within the scope of the Green Deal Action Plan, the title closely related to the agricultural sector has been included under the name "sustainable agriculture." Given the fact that Türkiye is among the countries that will be most affected by climate change due to its geographical location and the steps to be taken by its biggest trade partner within the scope of being the first climate-neutral continent, it will contribute to Türkiye's efforts to combat climate change and its consequences, as well as to the EU's. Therefore, it is pivotal for Türkiye to take actions for sustainable agriculture so that the measures to be taken by the EGD do not hinder the sustainability of Türkiye's agricultural trade with the EU (Ministry of Commerce 2021).

The actions determined under the title of “Sustainable Agriculture” of Türkiye’s action plan in line with the objectives set for agriculture within the scope of the EGD can be summarized as follows EU (Ministry of Commerce 2021):

- The research will be carried out to reduce the use of chemical fertilizers, pesticides, and anti-microbials.
- Within the framework of efforts to reduce pesticides, it is aimed to expand the use of biological and biotechnical control methods.
- Studies will be conducted by considering the target and policy changes in reducing the EU’s use of chemical fertilizers.
- Imposing initiatives with the EU aims to develop organic agricultural production, complete the harmonization of legislation and ensure mutual recognition.
- It is envisaged that land consolidation activities will be carried out.
- Geothermal resources will be used in Organized Industrial Zones based on Agriculture (geothermal greenhouse). Additionally, greenhouses and production facilities using renewable energy will be supported.
- Research and development (R&D) will be carried out on reusing waste and residues in agricultural production.
- It is aimed to do awareness-raising and consumer awareness activities for the recycling of food waste and residues and to carry out R&D on the reuse of waste and residues in agricultural production.
- Awareness-raising activities that will contribute to developing sustainable agriculture between Türkiye and the EU will be carried out through information sessions on the Farm to Fork Strategy and Biodiversity Strategies included in the EGD.

In addition to these, it is seen that there are objectives in the action plan on climate change that are very closely related to the agricultural sector. Among these goals are training on sustainable agricultural techniques, conducting R&D projects on this subject, disseminating good practices, and increasing the nature-based approach in land applications.

When other policy documents are examined for Türkiye, it is pointed out that some projects and practices, namely the New Economic Program covering the years 2021-2023 and the Presidential Annual Program for 2021, will be implemented by referring to climate change. For example, in the New Economic Program, it is discussed that “to ensure compliance with the EGD in Türkiye’s exports to the EU in the context of the EU Customs Union, vital research will be conducted, and required preparations will be made in coordination with not only the public and private sector but also non-governmental organizations and universities” (Ministry of Treasury and Finance 2020).

Another policy document is the Medium-Term Program covering the years 2022-2024. In this Program, it is emphasized that the significance of climate change has increased in global economic policies under the leadership of developed countries with approaches such as the EGD, and the necessity of green transformation has been openly expressed within the framework of policies to be implemented by other countries, especially the EU, which is Türkiye’s primary export market. It is also added in this Program that investments to be made in Türkiye will be shaped by considering the objectives and actions included in the Green Deal Action Plan.

To achieve the goals in the action plan, institutions (Ministry of Agriculture and Forestry and Ministry of Environment, Urbanization and Climate Change) in charge are required to follow a specific scheduled process. Türkiye’s roadmap for EGD within the scope of the action plan and what has been done so far are given in detail in Table 1.

Going through an economic transformation, which is the main target within the framework of the EGD, will not only mean compliance with EU criteria for the agricultural sector but also for others. What is more, it will pave the way for the goal of increasing Türkiye’s competitiveness in the international market.

The circular economy desired by the EU will also be able to contribute to Türkiye’s level of economic development. Furthermore, considering the export potential of Türkiye - EU agricultural products, this transformation in the agricultural sector may also yield desired results such as increasing production and productivity. Therefore, it is probable that the projects to be created in the agricultural sector in light of the EGD will contribute more to the export of agricultural products. However, for these possibilities to be realized, government and private sector policies and practices must be reconsidered concerning the circular economy.

Policies to be implemented in this direction will not only prevent the trade of agricultural products between Türkiye and the EU from being adversely affected but also ensure the growth in business between these two partners. Otherwise, Türkiye - EU economic

Table 1. The process* of the goals related to the agriculture in the action plan

<i>Goals and deadline*</i>	<i>Progress made</i>
<i>A green and circular economy</i>	
Improving the sustainable use of water in production and consumption and the reuse of wastewater (2021 IV. Quarter-2024 IV. Quarter)	Legislative works continue. Project studies under the coordination of General Directorate of Agricultural Research and Policies (TAGEM) continue. Negotiations, evaluations, and preliminary studies with municipalities are continuing in terms of the reusability of the effluent of wastewater treatment plants.
Calculation of sectoral water footprint on a basin basis (2023 IV. Quarter)	Projects have been prepared within the scope of the basin scale; blue, green, and grey water footprints will be calculated. A general methodology has been developed in this regard.
Calculation of sectoral water footprint for water uses (2023 IV. Quarter)	Projects have been prepared within the scope of sectoral water use; blue, green, and grey water footprints will be calculated. A general methodology has been developed in this regard.
Researching the use, benefits, and improvement aspects of remote sensing, sensors, and informatics applications in the management of water resources (2022 IV. Quarter)	The “National Project for the Development of the Digital Irrigation Management System” carried out under the coordination of TAGEM continues in 6 different regions (Kırklareli, Samsun, Mersin, Ankara, İzmir, and Şanlıurfa, Adana) in 2022. Data transfer studies by DSI continue. Work on installing limnigraphs for groundwater level measurements continues.
Reducing endocrine-disrupting chemicals (2021 IV. Quarter-2023 IV. Quarter)	The project to monitor endocrine-disrupting chemicals is at the tender stage. A revision of the regulation is planned.
<i>Sustainable agriculture</i>	
Reducing the use of pesticides and anti-microbials (2021 III. Quarter-2023 IV. Quarter)	Within the scope of the pesticide control program, 24.525 production places were inspected in 2021. Training and extension studies are carried out. “National Veterinary Antibiotic Resistance Monitoring Project” has implemented antimicrobial resistance. An electronic Prescription System and Pharmaceutical Tracking System were implemented for antimicrobials. The vaccine Tracking System started to be implemented. An increase of 25-40% was made in support payments in 2021 for biotechnical and biological control. The organic Agriculture Sector Meeting was held in 2021.
Development of organic agriculture (2023 IV. Quarter)	It is aimed to expand organic agriculture in 81 provinces. “Project Based Approach” is adopted. Legislative harmonization studies continue. The studies of the working groups continue.
Reducing the use of chemical fertilizers (2021 III. Quarter-2023 II. Quarter)	Four projects are carried out on olive plants in İzmir, peanut plants in Osmaniye, grape plants in Manisa, and cotton plants in Mersin. Three projects are carried out in Kırklareli, Ankara, and Malatya provinces to increase the efficiency of the use of fertilizers.
Land consolidation activities (2023 IV. Quarter)	In total, 6.02 million hectares of land were registered. In the first quarter of 2022, registration procedures were completed on 50.442 hectares.
Increasing the use of renewable energy in agriculture (2021 III. Quarter-2023 IV. Quarter)	Studies on the use of existing geothermal resources, which were started in Aydın, Denizli, İzmir, and Ağrı Provinces, in Specialized Organized Industrial Zones based on Agriculture (geothermal greenhouse), are continuing.
Improving waste and residue management in agricultural production (2024 II. Quarter)	Various projects are being carried out for the completion of R&D studies.
Reducing food loss and waste (2021 IV. As of Quarter)	Awareness and information activities and legislation studies continue.
Raising awareness of the EU Farm to Fork Strategy and Biodiversity Strategies (2021 IV. Quarter)	Training, information activities, and presentations were held.

Fighting climate change

Evaluation of the effects of climate change on terrestrial and marine areas and specific water resources through ecosystem-based approaches and practices (2022 IV. Quarter-2023 IV. Quarter)	<p>One national project is ongoing, and maps have been produced for figs, apricots, and cherries. A Strategic Plan for Adaptation to Climate Change in forestry has been prepared. Two projects are planned to start in the 4th quarter of 2023. Carbon stocks continue to be determined in protected areas. Therefore, one project proposal was presented on this subject. A total of 6 wetland management plans were approved in 2021. A total of 6 wetland management plans have been prepared in 2022 and are at the approval stage. Studies on land degradation leveling have continued. R&D studies continue. Awareness, education, and implementations continue. R&D studies for the measurement and monitoring of greenhouse gases continue.</p>
Compliance with EU Chemicals Legislation (2021 III. Quarter-2024 I. Quarter)	Legislative harmonization studies continue.
Fighting climate change (2021 IV. Quarter)	<p>Fighting Climate Change Report will be prepared (it has not yet been declared). Türkiye's National Climate Change Strategy and National Climate. Work on updating the Change Action Plan continues.</p>

Source: Ministry of Commerce 2021; Ministry of Agriculture and Forestry 2022

relations may be negatively impacted by this process.

One of the most critical constraints in Türkiye's transition to a green economy within the scope of the circular economy envisaged in the EGD is related to the cost of the process. Türkiye has initially earmarked 271 million Euros for green transformation within the scope of the EGD. It has been announced that until 2030, 260 million Euros will be invested each year, and the source will be largely carbon tax at the border (Yayman & Demir 2021).

Regarding compliance with the EGD, institutions in charge and organizations have started to take the preliminary steps for a transition to a circular economy by making arrangements in their fields within the framework of the environmentally friendly and green economy. It is imperative to take initiatives in this direction without wasting time so that cost of the implementations in the transition to a green economy can partially be covered by the incentives to be given by the EU.

The National Pre-accession Economic Reform Programs (2021-2023 and 2022-2024) is another policy document on the EGD. To support the green transformation and transition to a circular economy during the program period, investments in environmentally friendly production that is both energy and resource efficient will be promoted, and the targets and actions in the Green Deal Action Plan will be taken into account (Anonymous 2022g).

For these goals and actions to be successful, supporting R&D is essential. For this purpose, additional points were provided to the projects submitted in the 1st term of 2021 under the ARDEB (Research Support Programs Presidency) 1001 Program, one of The Scientific and Technological Research Council of Türkiye's Research Support Programs directly related to the priority R&D and innovation issues within the scope of compliance with the EGD; for example decreasing of pesticide fertilizer, developing of organic farming, recycling of waste and waste in agricultural production and food sector.

Another point is that Türkiye has declared a net zero greenhouse gas emission target by 2053. A long-term climate change strategy and National Climate Change Action Plan will be prepared with the support of the United Nations Development Program project. Türkiye's Intended National Contribution (Intended Nationally Determined Contributions-INDC) will also be updated within the project's scope (Anonymous 2022g). The following five years will be an intense period in which significant decisions are taken, and legal arrangements are made and turned into actions for the EU to reach the 2050 targets.

5. Conclusion and Recommendations

With the EGD, the EU intends not only to zero its net greenhouse gas emissions by 2050 but also to curtail global greenhouse gases while protecting industrial production and employment. To achieve these goals, the EGD has been announced to transition to a "carbon-

free economy” model in many primary and sub-sectors, from agriculture to industry, from transportation to energy. The EGD is seen as the EU’s economic growth and development strategy in the 21st century.

Given worldwide concerns about food security and accessibility, food accessibility and affordability are among the EU’s main challenges. Thus, from Farm to Fork Strategy is currently driving consumer choices. Furthermore, the expected difficulties in meeting the need for imported gas and fertilizers from Ukraine and Russia in producing inputs required for agricultural production have also raised the issue of self-sufficiency within the EU. These can be outlined as the adverse effects from Farm to Fork Strategy might face. However, it should be noted that the stated purpose of this strategy is to ensure the future competitiveness and resilience of European agriculture.

To implement planned studies on from Farm to Fork Strategy successfully, the following policy recommendations should be taken into account: i) Society should be informed and trained about from Farm to Fork and what impacts it will have on their lives; ii) Cattle breeders and farmers who will be harmed by policy changes should be provided with the necessary information about how new production methods will be and what kind of life they will lead; iii) Research on the strategy’s economic, social, or environmental impacts should be conducted. More concrete steps to compensate for the welfare and income losses that farmers may experience should be discussed. Another step that needs to be taken is the new CAP (2023-2027). Under the new CAP, Member States must develop national CAP strategic plans that detail how the new CAP will be implemented in their country.

With the EGD, the EU is committed to being a global leader and providing financial support for the necessary actions to be taken to work out solutions to the factors leading to climate change and environmental problems. In this context, considering that Türkiye is a significant stakeholder in agricultural trade with the EU, it is clear that the targets determined by the EGD can directly impact Türkiye’s agricultural sector. In this respect, to succeed in the transition and adaptation process to the EGD, a road map should be drawn for the agricultural sector, which is the subject of this article.

Third countries with ties with the EU will have to take action to adapt to the next transformation with the EGD since the economic structure, which is expected to change with the green transformation, will turn into a global initiative rather than EU policies in the following years. Therefore, for Türkiye to achieve sustainability by minimizing economic losses which might be suffered during the transition to “green production” within the scope of the EGD, the EGD needs to assess its sectoral impacts and plan and support the transition to harmonization. In this context, the action plan prepared under the leadership of the Ministry of Commerce is expected to strengthen Türkiye’s competitiveness, increase green investments and promote green transformation.

The policies Türkiye will put into effect for harmonization with the EGD must be efficient in many areas. Since the EGD is meant to protect and increase the Member States’ competitiveness upon their adaptation to the changing world, Türkiye also needs to keep up legislation and practice innovations to ensure more favorable conditions for competition exist. Some studies have started to be carried out by public authorities in Türkiye within the framework of harmonization with the policies of the EU, which is Türkiye’s largest export market. For this reason, the need to prepare sectoral impact analyses, determining how the sectors can be affected, and the government support mechanisms and processes related to legislative change has emerged. As mentioned in the related section of the text, the Ministry of Agriculture and Forestry and other relevant institutions have put into practice their actions on the issues they are responsible for at certain date intervals. At this point, it should be stated there may be problems in adapting to EGD in terms of some issues. For example, some targets such as organic farming area determined as 25%, dissemination of the use of biological and biotechnical control methods, land management planning, and practices seem difficult for Türkiye.

Concerning the economic transformation planned within the framework of the EGD, the crucial role falls to the governments. However, it should be noted that the support of all social stakeholders such as producers, consumers, and NGOs should be included in the legal regulations and projects to be implemented in this regard to rendering all these efforts to be rewarding. As EGD is meant to bring about significant change and active community participation, building trust is essential in this transition period for the planned practices and policies to work smoothly and be widely accepted.

It should be explained that the Deal will not only offer solutions to climate change but also secure a lot of support for the development and growth of economies. In this context, it is considered necessary for Türkiye to assess these assets well within the framework of a win-win approach. If Türkiye cannot make the requirements within the scope of this rapid transformation, it may inevitably be negatively affected by this incapability.

Türkiye should see the EGD as an opportunity for transition into a low-carbon economy in the context of agriculture and climate change, rather than just aligning with European rules. In this context, green agricultural development policies which will enable Türkiye to achieve its goals in the field of agriculture and climate change should be urgently put into effect.

Any delay experienced in the process of harmonization with the EGD may cause Türkiye to sustain severe losses in its exports to the EU, and at the same time, the domestic labor market can be adversely affected. Therefore, while the trends in the EU and the world are moving toward a greener economy, it has become a necessity for Türkiye to switch to a production model which respects nature and people and reduces carbon emissions to maintain and develop its current status in the areas where it is the leader in the world.

On a final note, considering the effects of the energy crisis created first by the COVID-19 pandemic and then the Russia-Ukraine war on EU countries, it can be concluded the climate change and agricultural sector of the EGD will feel this crisis much more closely. EU countries have started to put nuclear power plants on the agenda again, and coal-fired power plants will be used for a while to overcome the energy crisis. Europe has attained the goals of the EGD between 2020-2022; nevertheless, these latest developments on the way to the commitments in 2030 have emerged as an obstacle to the Deal.

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