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The Economic Impact of IPARD Supports: A Quantitative Analysis on Milk Producers in TR52 Region

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HIGHLIGHTS

- Analysing the economic impact of IPARD is important to determine the effectiveness of the program.
- The program has a positive economic impact on the studied dairy firms.
- Continuing these supports is beneficial to the sustainability of rural development.
- Including small businesses in these supports will contribute to the rural development process.

Abstract

The purpose of this study is to investigate the economic impact of the IPARD program on dairy farmers in the TR52 region who benefit from these supports. The absence of similar studies conducted on this subject for the TR52 region makes this study unique. Our research involved conducting face-to-face interviews with 101 dairy farms that received support from the IPARD I-II programs during 2011-2021 in the TR52 provinces of Karaman and Konya, which had the highest milk production in Türkiye as of 2019. The data were analyzed using independent-samples t-tests, one-way analysis of variance, and chi-square tests. The economic conditions of businesses before and after receiving IPARD support were examined in terms of variables such as income, production, employment, and productivity. In addition, we also analyzed businesses' perceptions IPARD and their attitudes towards the future. According to the findings, the vast majority of businesses have achieved significant increases in their total revenue, production levels, scale of operations, efficiency, and number of employees. Morever, it has appeared that the businesses in question are generally satisfied with the IPARD program. Another finding of this study that has potentially important implications for the sustainability of Turkish rural development is that businesses are forced to employ foreign labor, a finding that supports the dual labor market theory.

Keywords: IPARD program; Dairy farmers; TR52 region; EU supports

1. Introduction

Changes in people's overall economic circumstances over time are defined as *economic development* in the narrow sense. However, the need to improve individuals' living conditions requires that factors affecting human life, such as cultural issues, rights and freedoms, education, disease, and hunger, be included in the definition of economic development (Gönel, 2010: 5). Development, in a general sense, is related to the

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establishment of the most fundamental human values and the development of tools to spread these values to a large segment of society. In addition to earning a living, access to adequate housing and food above the poverty line, respect for individuals, equality before the law, political participation and democracy and employment opportunities befitting human dignity constitute these values (Cypher, 2014: 14-15).

Urban and rural communities in all countries are continually undergoing changes that can affect issues such as resource distribution, people's attitudes, production methods, institutional structures, and social values. In this sense, development denotes a dynamic process of progressing to a more advanced stage than the previous or current state. This process consists of three fundamental elements: economic, social, and human development (Oalkley and Garforth, 1985: 1-2). Income distribution, taxation, economic growth, financial development, infrastructure, technology, foreign trade, capital accumulation, investment, and natural resources are among the economic factors that influence the development process (Şaşmaz and Yayla, 2018: 250).

Entrepreneurship, widely regarded as a fundamental driver of economic development, is an agent of change and a process that increases the efficiency of resource utilization. Entrepreneurship will contribute to economic development under conditions in which there is a fair system that mitigates risks, such as banks' reluctance to provide credit and higher capital costs (Toma *et al*., 2014: 438-441). Furthermore, development is achievable through the joint development of economic institutions, industrial and corporate structures, and technologies. Government programs and policies are instrumental in this process (Nelson, 2008: 15). When viewed from a broader perspective, development refers to an increase in people's welfare level, meaning that individuals enjoy a higher quality of life, encompassing not only an increase in their income but also improvements in services such as health and education, as well as cultural and political development.

Changes in conditions that universally affect human life have led to the concept of development being approached from different angles. In this context, one dimension of development is *rural development*. Rural development essentially involves increasing the income levels of people living in rural areas and improving education, health, security, and infrastructure networks. The fundamental objective of rural development is to ensure social and economic progress in rural areas by addressing the problems faced by those living there, meeting their basic needs, and thereby increasing their income and standard of living, thereby enabling them to reap the rewards of their labor and production.

In the past, the concept of rural development was understood as increasing the income and welfare levels of people living in rural areas and those employed in the agricultural sector. Today, rural development encompasses increasing agricultural production in rural areas and developing production outside of agricultural activities, ensuring that products are healthy and environmentally friendly and improving product quality, protecting the environment and natural resources, and providing infrastructure for rural areas (Bakırcı, 2009: 55). The ever-increasing competition in a globalized world in the 1990s played a significant role in reshaping the understanding of rural development. Following the implementation of adjustment policies and numerous regional agreements, international capital movements and trade have been liberalized. This has also altered the scope of rural development and made it necessary for small farmers to become more competitive amid growing international competition (De Janvry *et al.*, 2002: 1605). In this sense, rural development refers to the practices and processes that will bring about change in the economic and social structures of people living in rural areas (Geray, 1999: 63). In addition to improving the living standards of people living in rural areas, it is necessary to ensure that this improvement is sustainable. Furthermore, ensuring development in rural areas is also an important part of the country's overall economic development process.

In Türkiye, rural development is addressed in development plans and medium-term programs, which outline the current state of rural areas and the measures that taken to address the problems encountered. In addition, rural development action plans and National Rural Development Strategies (NRDS) are periodically prepared in Türkiye. NRDS documents chart a roadmap for implementing policies for rural development in Türkiye. In line with these strategies, numerous rural development projects and programs are being

implemented in Türkiye, with grant support and loans provided through both national and international resources. One such program is IPARD.

IPARD constitutes the "rural development" component of the IPA program, through which the EU provides assistance to candidate and potential candidate countries prior to their accession to the Union. Under IPARD, the EU provides financial support to candidate and potential candidate countries to help them align with the EU's common agricultural and rural development policy. In the IPARD program, countries identify specific priority areas and allocate areas to them. The IPARD program provides project-based funding support. Türkiye, which has candidate country status for EU membership, also benefits from IPA financial assistance.

The TKDK (Agriculture and Rural Development Support Institution), accredited by the EU in 2011, is the institution responsible for the distribution of funds in Türkiye. To date, two programs, IPARD I (2007-2013) and IPARD II (2014-2020), have been implemented in 42 provinces in Türkiye. Through these programs, project owners have been joint EU-Türkiye participation, for their investments. The IPARD III (2021-2027) program is still being implemented in various provinces of Türkiye. The provinces of Konya and Karaman, which comprise the TR52 region, are also among those benefiting from this program. In these provinces, investments provided under the measures for Investments in Physical Assets of Agricultural Enterprises (101) and Investments in Physical Assets Related to the Processing and Marketing of Agricultural and Fishery Products (103) are prominent. Under the sub-measures "dairy farms" (101-1) and "processing and marketing of milk and dairy products" (103-1), which are part of these measures, significant support has been provided to businesses operating in the sector in the provinces of Konya and Karaman. Konya province, which ranks first in milk production in Türkiye, has great potential in terms of both the number of dairy animals and the quantity of milk produced, as well as milk production per animal (productivity).

There are three factors that make this research significant. The first is that Konya was Türkiye's largest milk-producing province in 2019 (TUIK, 2024). Secondly, dairy farms constitute one of the sectors receiving the most support under IPARD in Konya province. Thirdly, based on our literature review there is no similar applied study on this subject for the TR52 region. Furthermore, assessing the effectiveness of projects supported by TKDK and funded in milk production in these two provinces is important for the program's sustainability.

Within this framework, the purpose of this study is to examine the impact of the IPARD program implemented by the Agricultural and Rural Development Support Institution (TKDK) on milk production and milk-producing enterprises in the TR52 region, whether enterprises are satisfied with the program, the current status of enterprises, and the program's contributions to producers. The study may also provide important policy recommendations to decision-makers on whether the support provided to businesses within the program is effective and, consequently, whether similar programs should be continued in the future. For this purpose, the study examined the economic impact of IPARD program grants on the dairy producer enterprises in question. It compared the economic situation -before and after receiving IPARD support- of existing dairy producer enterprises in the TR52 region that received support under the IPARD I-II programs implemented by TKDK in the 2011-2021 period. The rest of the study is organized as follows.

The following section presents a literature review evaluating current theoretical and empirical studies. The third section explains the model, material, and method used in the study. The fourth section presents the results and findings of the tests conducted within the scope of the research. The conclusion section includes discussion, evaluation, and recommendations regarding the results obtained.

2. Literature Review

There are numerous studies the national and international literature on rural development, both theoretical and empirical. A significant portion of this work involves evaluating the impact of policies, plans, and programs designed to promote rural development on social and economic activities and the rural population in rural areas, as well as examining the factors that influence rural development. Empirical studies conducted

in Türkiye are mostly general survey models that fall under quantitative research, based on analyses of data obtained from surveys and interviews with local residents in rural areas. There are numerous studies examining the effectiveness and impact of various programs created by institutions and organizations in Türkiye, as well as the support provided under these programs. A significant portion of these studies examine the impact of IPARD funds, implemented through the TKDK developed by the EU for pre-accession candidate countries, on businesses benefiting from the support, rural residents, and the development of rural areas.

Among studies examining the IPARD program and its impact from different perspectives, Gülçubuk et al. (2016) assessed the impact of projects implemented under these grants and the effectiveness of funds allocated to the livestock and dairy production sector in socio-cultural, technological, institutional, environmental, and economic terms. İnal (2020) investigated the economic impact of support on the province of Diyarbakır. Özkul and Bozkurt (2020) investigated the impact of IPARD funds on the growth performance of beneficiary businesses and the effect of the businesses' economic conditions in the province of Isparta. Toker (2021) investigated whether the IPARD program benefited businesses. The results of these studies, which employed different analytical methods, indicate that IPARD support generally has a positive impact for the situations examined.

Evaluating support measures consisting of livestock and dairy production measures, Gülçubuk et al. (2016) conducted a survey with 47 project owners in the provinces of Şanlıurfa, Sivas, Konya, Diyarbakır, Çorum, Balıkesir, Ardahan, Elâzığ, Bursa, and Ankara and analyzed the data using the "multiple compatibility analysis technique." The study concluded that after receiving support, businesses increased their sourcing of raw materials and inputs from the local economy, thereby contributing to economic development. They state that, in addition to increased production among supported businesses, improvements in productivity have been observed, understanding of hygiene and environmental cleanliness has developed, and awareness of technology and water use has increased. Another finding is that employed individuals have increased, while their costs have decreased. In his analysis of data obtained from surveys conducted on 127 businesses in the dairy, beekeeping, and meat production sectors, İnal (2020) utilized the Bonferroni test, independent samples t-test, and Kruskal-Wallis test. The analysis concluded that the majority of businesses increased the value added of their products, the number of animals fed, production levels, employment, and income.

Özkul and Bozkurt (2020) interviewed 109 companies as part of their study and analyzed the data using descriptive statistics, the chi-square test, and logit analysis. The results of the analysis show that nearly 80% of companies benefiting from the support observed an increase in their growth performance, a 20% increase in nearly their annual turnover, and doubled the number of people they employed. Furthermore, researchers concluded that innovation, skill development, grant amount, family business, business type, and education variables affect the growth performance of companies benefiting from support. In his 2021 study, Toker analyzed survey data collected from 168 businesses in Isparta province and 284 businesses in Burdur province using the Kruskal-Wallis test, Mann-Whitney U test, independent samples t-test, factor and cluster analysis, and one-way analysis of variance (ANOVA). The analysis found that businesses increased their efficiency in resource utilization, competitiveness, production quality, productivity, and employment. In addition, concludes that working conditions in businesses improved, production diversity increased, and production losses have decreased.

There are also studies that examine IPARD specifically in relation to the dairy sector. Bilici (2016); Koç (2016); Örs (2018); Çoban et al. (2019); and Asan (2021) examined and found a positive impact of IPARD support on various economic factors such as production volume, labor employment, competitiveness and technology use in dairy producer enterprises benefiting from the funds.

Bilici (2016) investigated the impact of IPARD support on dairy cattle farming companies across Türkiye (17 provinces), while Koç (2016) did the same in the provinces of Sivas and Yozgat. Bilici (2016) surveyed 102 businesses and used Pearson Correlation, one-way ANOVA, chi-square tests, and t-tests to analyze the data. The analysis showed that the competitive strength of the companies examined, the skill and knowledge levels of their employees, and their use of technology increased. The purchase guarantee provided marketing opportunities for businesses and some progress has been made in encouraging the use of improved breeds of

animals in production. Koç (2016) emphasized that businesses improvements in hygiene, waste management, and animal welfare. However, the author underscoring the businesses are falling short in terms of sustainability and compliance with EU standards, and a need for improvement. It is stated that this can be resolved through training in sustainability and by improving the efficiency of production techniques.

Çoban et al. (2019) evaluated the post-support economic situation of dairy producer enterprises benefiting from IPARD support in Konya province based on data from a survey of 84 dairy enterprises. According to their findings, 92% of businesses have increased their technical knowledge in production, while 88% have experienced growth in production and employment. They indicate that IPARD projects achieved their objectives due to support from TKDK throughout the process, its project monitoring and evaluation, increased efficiency in the use of financial resources, the operators' experience and the thorough preparation of the projects.

Asan (2021) conducted a survey with four breeding cattle farms comprising 160 Simmental and 114 Holstein cows. The study examined the fertility and milk-yield characteristics of Simmental and Holstein cattle in companies operating under the IPARD program in Burdur and evaluated the profitability of these businesses. Descriptive statistics, General Linear Model (GLM), ANOVA, and Pearson Correlation methods were used to analyze the data. The findings indicate that the businesses examined sold their milk at higher prices than other businesses, thereby becoming more competitive with IPARD and increasing their profitability. The study has concluded that Simental and Holstein cows have high fertility and milk production.

There is extensive international literature examining the development levels of rural areas across many countries and the factors that affect their development. Our study focuses on research that examines and evaluates the effectiveness of IPARD and various other support programs, as well as the success of these projects in the country's development.

Studies examining IPARD funds include Kralik et al. (2011) which investigates the efficiency of IPARD fund utilization in Croatia; and Otten (2013), which focuses on the EU integration potential of the Tikves region and the applicability of the IPARD program to the region. Mbrica (2013) examined the effectiveness of Slovenia's SAPARD program and Macedonia's IPARD program. Zekic et al. (2016) analyzed the impact of IPARD funds on the socio-economic development of people living in rural areas and their contribution to rural development in the Republic of Serbia. Đuric and Puškarić (2018) investigated the limitations of using IPARD funds for financing rural and agricultural development. Kralik et al. (2011) analyzed survey data from 507 farm owners using the chi-square test. The analysis found that two factors negatively affecting the efficient use of IPARD funds in Croatia were farmers' average monthly income and education level. Otten (2013) conducted an anthropological field study in 2011 to investigate the impact of IPARD on farmers in the Tikves region of Macedonia. The study emphasizes that farmers must invest substantial funds to benefit from the IPARD program and argues that this requirement makes it nearly impossible for most farmers to take advantage of the opportunities it offers. Mbrica (2013) investigated the effectiveness of the IPARD program using and regional inequality analyses. It is stated that delays in establishing the administrative system for the IPARD program due to difficulties in Macedonia and Slovenia, have adversely affected program performance. Both countries have approved and completed a small number of projects. Despite all the negatives, both programs contributed to the development of agricultural production capacity. This contribution was greater for Macedonia. Because Macedonia has correctly identified a priority area (the dairy processing sector), the quality of applicants was high, and there was significant interest in investments. Using descriptive qualitative analysis methods, Zekic et al. (2016) found that IPARD funds have had a limited impact on rural development in the Republic of Serbia. This was because IPARD funds focused largely on investments in agricultural enterprises rather than targeting rural households. Using descriptive and historical analysis methods, Đuric and Puškarić (2018) examined the experiences of countries that benefited from the program during 2007-2013 and the distribution of funds during 2014-2024. The analysis concludes that establishing appropriate institutional capacity is the primary condition for ensuring the most efficient use of available funds, and that another way to achieve this is to set a limited number of priorities in the financing of rural and agricultural

development. Researchers emphasize the need to develop consulting services that can provide training and information to potential beneficiaries regarding the funds to be provided.

In another study, Vapa Tankosić et al. (2023) conducted a survey of 82 organic farmers and IPARD employees to examine their attitudes toward agricultural ecological measures and their perspectives on structural and economic factors in agricultural environmental management practices. Their correlation and regression analysis conclude that participants view agricultural ecological measures as an appropriate approach to increasing production diversity and improving environmental conditions. Producers emphasize the importance of adequate agricultural education and training to benefit from these measures, while noting that the measures' complexity, agricultural workers, land use, and property rights may pose obstacles to their implementation. Regarding the implementation of these measures, the institution's employees consider that agricultural education and training, farmers' prior experience with similar measures, and their responsibility to future generations are significant motivators, whereas property rights and the size of agricultural enterprises are the greatest obstacles.

Radović et al. (2024) evaluated the IPARD II program implemented in Serbia. Spalevic et al. (2024) examined whether the IPARD program contributed to the modernization of the agricultural sector and determined the program's effectiveness and impact, while Jović (2025) aimed to examine the behavior of agricultural producers regarding access to funding financing by participating in the IPARD program in Serbia. Using descriptive statistics and synthesis methods Radović et al. (2024) concluded that projects meeting the identified criteria accounted for fewer than half of the projects submitted, yet a substantial amount of funding was allocated under the program. Spalevic et al. (2024) conducted a SWOT analysis by interviewing 20 participants, including 5 policymakers and 15 farmers. The analysis indicates that providing farmers with equipment and machinery through the IPARD program contributes to the agricultural sector's development. Researchers emphasize that, despite challenges such as regional disparities, communication barriers, and meeting project requirements, the program has facilitated infrastructure development and positively affected productivity and yields. Jović (2025) surveyed 182 agricultural producers and analyzed the survey data using the t-test. According to the analysis results, age and land ownership affect eligibility for IPARD funds; when these two factors are considered, a stable financing opportunity emerges.

Overall, the international literature identifies shortcomings in the IPARD program; however, despite these shortcomings, the program has been found to have a positive impact in the areas studied.

3. Materials and Methods

This section describes the research model, hypotheses, population, sample, data collection, and analysis methods.

3.1. Model and Hypotheses

This study, conducted to examine the economic impact of the support provided by TKDK on existing dairy producer enterprises benefiting from IPARD support in the TR52 region, utilized the “survey” model, which is among the non-experimental quantitative research methods. The following hypotheses have been tested.

- Hypothesis 1: There is a statistically significant difference between the amount of milk produced by dairy farmers receiving IPARD support in the TR52 region before and after the support.
- Hypothesis 2: There is a statistically significant difference between the milk production per animal before and after receiving IPARD support among dairy farmers in the TR52 region.
- Hypothesis 3: There is a statistically significant difference between the number of dairy cows owned by dairy farmers receiving IPARD support in the TR52 region before and after receiving support.
- Hypothesis 4: The expectations of dairy farmers receiving IPARD support in the TR52 region, their observations and demands regarding the current situation, and their attitude towards milk production show a significant difference depending on the impact of IPARD support on income.

- Hypothesis 5: Expectations, observations and demands regarding the current situation, and attitudes toward milk production among dairy farmers receiving IPARD support in the TR52 region, differ significantly according to the rate of increase in milk production following IPARD support.
- Hypothesis 6: The current milk production volume creates a statistically significant difference in the expectations of milk producers receiving IPARD support in the TR52 region, their observations and demands regarding the current situation, and their attitude towards milk production.
- Hypothesis 7: The rate of increase in milk production per animal after IPARD support creates a statistically significant difference in the expectations of milk producers receiving IPARD support in the TR52 region, their observations and demands regarding the current situation, and their attitude towards milk production.

3.2. Material

The material for this study consists of 101 existing dairy farms that received support in the TR52 region under IPARD I and IPARD II. Here, "existing business" refers to businesses that were already engaged in milk production activities before receiving support. To investigate the economic impact of IPARD on these businesses, the businesses must have engaged in milk production prior to receiving support. Information on whether businesses receiving support were producing milk prior to receiving support was obtained from producers, and it was determined that 135 milk-producing businesses were present in the study population.

The following formula was used to calculate the required sample size for the research (Sümbüloğlu and Sümbüloğlu, 2000: 65).

$$n = \frac{N \cdot t^2 \cdot p \cdot q}{(N-1) \cdot d^2 + t^2 \cdot p \cdot q} \quad (1)$$

According to this formula, n represents the sample size, N represents the population, t represents the t-statistic table value corresponding to a specific margin of error, p represents the probability of the event being observed, q represents the probability of the event not being observed, and d represents the accepted ± deviation based on the probability of the event occurring. For this study, N=135 businesses were considered, with 5% margin of error (t=1.96, p=0.75, q=0.25). Taking into account the ± deviation d=0.05 accepted at a 95% probability (confidence level), when all values were set in the formula, n=92.14 was found. Thus, the required sample size for this study was estimated at approximately 92 individuals. For the survey to be conducted within the scope of this study, interviews were conducted with 101 dairy farms, exceeding the minimum sample size determined. The research covers the period between 2011 and 2021.

3.3. Data Collection Method

The data used in the study were collected through a survey conducted among existing dairy farms benefiting from the IPARD program in the TR52 region under the measures for dairy farms (101-1), which constitute a sub-measure of the measure for Investments in Physical Assets of Agricultural Enterprises (101) among the IPARD supports provided by TKDK. The survey[1] conducted with the businesses identified within the scope of the study, the interviews were conducted through face-to-face interviews in October and November 2023. The questionnaire form prepared in line with the purpose of the research consists of two parts. The first section comprises open-ended and multiple-choice questions aimed at determining the

[1] The questionnaire form was prepared using studies conducted by Şerefoğlu (2008), Asoğlu (2015), Bilici (2016), Özyücel (2018), and Toker (2021). The 5-point Likert scale used in the study is the milk production attitude scale developed by Özyücel (2018). This scale was used in the study with permission from Özyücel (2018) and was adapted to suit the purpose and sample of this study.

demographic characteristics of business owners and the business's production structure and the economic impact of IPARD support on businesses.

The second section includes a 5-point Likert-type scale comprising 7 statements on milk production attitudes which aims to determine producers' expectations by gathering businesses' views on the IPARD program. The Konya districts surveyed in the TR52 region are Akören, Akşehir, Altınekin, Beyşehir, Cihanbeyli, Çumra, Derbent, Doğanhisar, Emirgazi, Ereğli, Hüyük, Ilgın, Kadınhanı, Karapınar, Karatay, Kulu, Meram, Sarayönü, Selçuklu, Yunak, and Karaman center.

3.4. Method of Analysis

Independent-samples t-tests, one-way analysis of variance (ANOVA), Chi-Square tests, and correlation and regression analyses were used to test the established hypotheses. To compare scale scores across groups, independent samples t tests and ANOVA were performed. A Chi-Square test was conducted to examine relationships between discrete and categorical variables and to assess whether differences in frequency distributions between two variables were random. The analysis was performed using SPSS-22.

4. Results

The validity and reliability of the scale used in the study were tested first. After confirming that the scale was structurally valid and reliable, the research hypotheses were tested. A brief summary of the descriptive statistics for the research sample is provided below.

4.1. Construct Validity and Reliability Analysis

Prior to analyzing the data field research data, the construct validity of the research scale was assessed using AFA, and its reliability was assessed using Cronbach's alpha. In this regard, the Kaiser-Meyer-Olkin (KMO) value was calculated to assess sample adequacy in factor analysis. The distribution of the universe was analyzed using the Bartlett test of sphericity. The KMO value found in the analysis is 0.702. According to Bartlett's test of sphericity, the p-value (sig.) is 0.000, indicating a high level of significance. In other words, the KMO value and Bartlett's sphericity test results indicate that the data collected are suitable for factor analysis. To determine the factor structure of the scale used in the study, exploratory factor analysis was first conducted. Subsequently, a principal component analysis was performed using the Component Matrix and the Rotated Component Matrix (Varimax rotation).

After rotation, the scale is found to be two-dimensional. The eigenvalues of both factors are greater than 1, namely exceeding the required minimum value. The loadings of the items on the scale range from 0.491 to 0.969, which exceeds the critical value of 0.30. The total variance of the factor was calculated to be 67.740%, which exceeds 0.50. Given a reliability coefficient of 0.776, the scale is considered highly reliable. The analysis shows that the scale used has construct validity and is reliable.

The variance explained by the factor constituting the expectation sub-dimension is 45.562%. The eigenvalue of this factor is 3.189 and its reliability coefficient is 0.860. The factor loadings for the expectation sub-dimension range from 0.599 to 0.969, and this factor consists of the following 4 statements:

- "I would like to continue producing milk for the next 10 years."
- "I would like to further increase my milk production."
- "I would like to increase the amount of milk I am selling."
- "If given the opportunity, I would like to benefit from IPARD support again."

The variance explained by the factor that constitutes the sub-dimension of findings and demands related to the current situation is 22.178%. The eigenvalue of this factor is 1.552, and the reliability coefficient is 0.710. The factor loadings for the sub-dimension of observations and demands regarding the current situation range from 0.492 to 0.843, and this factor consists of the following 3 statements:

- "I believe the support IPARD provides to dairy farmers is insufficient."
- "I would like IPARD to increase the amount of support it provides to dairy farmers."

- "I would like IPARD to diversify the support it provides to dairy farmers."

The data used in the study were also tested to determine whether they met the normality assumptions. The skewness coefficient for the milk production scale is -1.213, and the kurtosis coefficient is 1.385. The skewness coefficient for the expectations sub-dimension is -1.188, and the kurtosis coefficient is 0.724. The skewness coefficient for the sub-dimension of findings and demands related to the current situation is -0.709, and the kurtosis coefficient is 0.214. These results indicate that the data follow a normal distribution, which allows parametric tests.

4.2. The Findings

Table 1 presents the frequencies and percentages of participants' responses to questions regarding their demographic information.

Table 1. Descriptive statistics.

		Frequency	(%)
Education	Elementary school	20	19,8
	Secondary school	20	19,8
	High school	28	27,7
	University/ College	33	32,7
Length of milk production period	0-10 years	33	32,7
	11-20 years	39	38,6
	More than 21 years	29	28,7
How did you learn about support?	Promotional meeting	26	25,7
	Friends–Relatives	51	50,5
	News–Television	15	14,9
	Other	9	8,9
Have you received project consulting?	Yes	97	96,0
	No	4	4,0
Problems encountered during project implementation	No problem	60	59,4
	Lack of technical information in our business	6	5,9
	Institutions' lack of technical info	9	8,9
	Bureaucratic formalities	26	25,8
Foreign employee	Yes	54	53,5
	No	47	46,5
	Total	101	100,0

In terms of educational background, 32.7% of survey participants are university/college graduates, and 60.4% of participants have a high school education or higher. 67.3% of participants have been engaged in milk production activities for more than 10 years. This indicates that the majority of existing dairy producers who received support during the period examined under IPARD I and IPARD II had experience in dairy production activities. Only 25.7% of participants were informed about IPARD support through promotional meetings. 96% of participants received help from consulting firms during the IPARD project preparation process. 28.8% of participants stated that they encountered bureaucratic problems during the implementation process. 53.5% of the businesses participating in the survey employ foreign workers.

The results of the chi-square test conducted to determine whether there is a statistically significant difference between the milk production, productivity, and number of animals used for production before and after receiving IPARD support for dairy farmers in the TR52 region are presented in Tables 2, 3, and 4.

Table 2. Change in milk production before and after IPARD support.

		Milk production after support								χ^2	P
		1000 lt. and below		1001-2000 lt.		2001 lt. and above		Total			
		n	%	n	%	n	%	n	%		
Milk production before support	1000 lt. and below	13	20	26	40	26	40	65	100	28,843	0,000*
	1001-2000 lt.	0	0	2	7,1	26	92,9	28	100		
	2001 lt. and above	0	0	0	0	8	100	8	100		
	Total	13	12,9	28	27,7	60	59,4	13	100		

* %5 significance level.

According to these results, there is a statistically significant difference between the amount of milk produced by the participants in the study before and after IPARD support ($\chi^2(4)=28,843$; $p<0,05$). Eighty percent of dairy farmers producing 1,000 liters or less before receiving support now produce more than 1,000 liters after receiving support. Meanwhile, 92.9% of farms producing between 1,000 and 2,000 liters of milk increased their milk production to over 2,000 liters.

Table 3. Change in productivity before and after IPARD support.

		Milk production per animal after support								χ^2	P
		8 lt. and below		9-16 lt.		17-24 lt.		25 lt. and above			
		n	%	n	%	n	%	n	%		
Milk production per animal before support	8 lt. and below	6	85,7	1	14,3	0	0,0	0	0,0	107,756	0,000*
	9-16 lt.	0	0,0	1	11,1	6	66,7	2	22,2		
	17-24 lt.	0	0,0	1	1,3	17	22,7	57	76		
	25 lt. and above	0	0,0	0	0,0	0	0,0	10	100		

* %5 significance level.

After support, 14.3% of milk producers who previously produced 8 liters or less began producing between 9-16 liters, 66.7% of participants who previously produced between 9 and 16 liters began producing between 17-24 liters, and 22.2% began producing 25 liters or more. 76% of participants producing 17-24 liters of milk began producing 25 liters or more.

Table 4. Change in the Number of dairy animals before and after IPARD support.

		Number of dairy animals after support										**χ^2**	**P**
		25 and below		26-50		51-75		76-100		101 and above			
		n	%	n	%	n	%	n	%	n	%		
Number of dairy animals before support	25 and below	3	9,1	7	21,2	7	21,2	8	24,2	8	24,2	42,033	0,000*
	26-50	1	3,7	3	11,1	3	11,1	7	25,9	13	48,1		
	51-75	0	0,0	0	0,0	0	0,0	0	0,0	16	100		
	76-100	0	0,0	0	0,0	0	0,0	3	15,8	16	84,2		
	101 and above	0	0,0	0	0,0	0	0,0	0	0,0	6	100		

* %5 significance level.

According to these results, there is a statistically significant difference between the number of dairy animals before and after IPARD supports ($\chi^2(16)= 42,033$; $p<0,05$). Among dairy farmers producing milk with 25 or fewer animals before receiving support, 24.2% of them increased the number to 76-100 animals, 24.2% to 101 or more animals. 48.1% of participants who produced milk with 26-50 dairy animals started producing with 101 or more dairy animals after receiving support. Furthermore, all participants who produced milk with 51-75 dairy animals started producing with 101 or more dairy animals after receiving support.

These results show production, average daily milk yield per animal, and the number of animals in production have increased significantly among existing dairy farmers receiving IPARD support. Thus, IPARD support has had a positive impact on milk production volume, productivity, and the scale of existing dairy producers benefiting from the support in the TR52 region.

Table 5 presents the results of the t-test conducted to assess whether there is a significant difference in the expectations of dairy producers receiving IPARD support in the TR52 region, their observations and demands regarding the current situation, and their attitudes toward milk production, based on the impact of IPARD support on income.

Tablo 5. Results of independent t-test on milk production attitude scale with respect to the effect of IPRAD support on income.

Variable	Observation	Mean	SS	t	df	P
Expectation						
Yes	92	4,01	0,97	2,063	8,729	0,070
No	9	3,00	1,43			
Observations and demands regarding the current situation						
Yes	92	4,05	0,57	1,780	8,510	0,111
No	9	3,44	1,00			
Milk production attitude						
Yes	92	4,03	0,61	3,550	99	0,001*
No	9	3,22	0,960			

* %5 significance level.

There is a statistically significant difference in attitudes toward milk production among participants in the study based on income distribution ($t(101) = 3,550$, $p = 0,001 < 0,05$). Participants who reported that their income increased with IPARD support (mean=4.03) held a more positive attitude toward milk production than those who answered no (mean=3.22).

The expectations of dairy farmers receiving IPARD support in the TR52 region, their observations and demands regarding the current situation, and whether their attitude toward milk production differs significantly with the rate of increase in average daily milk production attributable to IPARD support were investigated using a one-way analysis of variance. The results are presented in Table 6.

Table 6. Results of one-way analysis of variance on milk production attitude scale based on milk production growth rate.

Variable	Rate of growth	Observation	Mean	SS	F	p	Different groups
Expectation	%25 and below	11	3,5682	1,31857	2,505	0,048*	%76-%99> others
	%26-%50	19	3,6316	1,25932			
	%51-%75	41	3,8963	0,96659			
	%76-%99	19	4,5395	0,44303			
	%100 and above	6	3,7500	1,25499			
Observations and demands regarding the current situation	%25 and below	11	3,9091	0,93203	0,450	0,772	
	%26-%50	19	3,8947	0,73747			
	%51-%75	41	4,0976	0,51231			
	%76-%99	19	4,0351	0,54314			
	%100 and above	6	3,9444	0,61162			
Milk production attitude	%25 and below	11	3,7386	1,04534	1,876	0,121	
	%26-%50	19	3,7632	0,83218			
	%51-%75	41	3,9970	0,54122			
	%76-%99	19	4,2873	0,37805			
	%100 and above	6	3,8472	0,89197			

* %5 significance level.

There is a significant difference in the expectations of dairy farmers participating in the study, based on the rate of increase in milk production. ($F_{(1,100)}$=2,505, p=0,048<05). The Tukey multiple comparison test indicates that the 76-99% group (Mean = 4.53; SD = 0.44) differs significantly from the perspectives of all other groups. In other words, participants with a milk production growth rate between 76% and 99% had higher expectations than participants in all other groups. It is possible to state that producers with milk production growth rates between 76% and 99% have more positive expectations than those with lower growth rates.

Table 7 presents the results of by current milk production level.

Table 7. ANOVA results from milk production attitude scale based on current milk production.

Variable	Production level	Observation	Mean	SS	F	p	Different groups
Expectation	1000 liters and below	13	4,1538	1,05346	4,164	0,018*	2001 liter and above > 1001- 2000 liter all others
	1001- 2000 liter	28	3,4464	1,30412			
	2001 liter and above	60	4,0833	0,84204			
Observations and demands regarding the current situation	1000 liters and below	13	3,8974	0,83205	0,840	0,435	
	1001- 2000 liter	28	3,8929	0,70304			
	2001 liter and above	60	4,0611	0,55061			
Milk production attitude	1000 liters and below	13	4,0256	0,72937	3,548	0,033*	2001 liter and above > 1001- 2000 liter all others
	1001- 2000 liter	28	3,6696	0,85315			
	2001 liter and above	60	4,0722	0,54827			

* %5 significance level.

According to these results, there is a statistically significant difference between the expectations of dairy farmers participating in the study and their post-support (current) milk production levels ($F_{(1,100)}$=4,164, p=0,018<05). The results of the Tukey multiple comparison test show which two groups the differences originated from: those with a daily average milk production of 2001 liters and above (Mean = 4.08, SD = 0.84) and those with an average daily milk production of 1001-2000 liters (Mean = 3.44, SD = 1.30). Participants with a post-support (current) milk production volume of 2001 liters and above have higher expectations than participants in all other groups who produce an average of 1001-2000 liters of milk per day.

There is a statistically significant difference between the milk production attitudes of dairy farmers participating in the study based on their post-support (current) milk production levels ($F_{(1,100)}$=3,548, p=0,033<05). Results of the Tukey multiple comparison test show that there is a difference between the attitude of those producing 2001 liters and above (Mean = 4.07, SD = 0.54) and the group producing 1001-2000 liters (Mean = 3.66, SD = 0.85). Participants with a post-support (current) milk production quantity of 2001 liters or more per day have a milk production attitude closer to that of the group producing 1000 liters or less (Mean = 4.02, SD = 0.72) than that of the group producing 1001-2000 liters of milk. In general terms, among the dairy farmers included in the research, those with higher milk production have more positive expectations and attitudes toward milk production than others.

The results of the one-way analysis of variance (ANOVA) test conducted to compare participants' attitudes toward milk production based on the effect of IPARD support on the rate of increase in milk productivity are presented in Table 8.

Table 8. Results of ANOVA on milk production attitude scale based on changes in production per animal.

Variable	Change	Observation	Mean	SS	F	p	Different groups
Expectation	No increase	5	3,0000	1,42522	7,100	0,000*	%25 and less < %26- %50
	%25 and less	32	3,3984	1,15329			
	%26- %50	47	4,2500	0,76258			%25 and less < %51 and above
	%51 and above	17	4,2353	0,92901			
Observations and demands regarding the current situation	No increase	5	2,9333	0,79582	6,698	0,000*	No increase <all other groups
	%25 and less	32	3,9375	0,66364			
	%26- %50	47	4,0567	0,52622			
	%51 and above	17	4,2353	0,52394			
Milk production attitude	No increase	5	2,9667	0,91828	9,552	0,000*	No increase < all other groups
	%25 and less	32	3,6680	0,74404			
	%26- %50	47	4,1534	0,52641			
	%51 and above	17	4,2353	0,42973			

* %5 significance level.

According to these results, there is a statistically significant difference between the expectations of dairy farmers participating in the study regarding the rate of increase in productivity provided by IPARD support (F (1,100) = 7,100, p=0,000<05). The results of the Tukey multiple comparison test showing which two groups the differences originated from indicate that the difference arose between those with a productivity increase rate between 26% and 50% (Mean = 4.25; SD = 0.76) and those with 25% or less (Mean = 3.39; SD = 1.15) and those with 51% and above (Mean = 4.23; SD = 0.92) and those with 25% and below (Mean = 3.39; SD = 1.15). Expectations for productivity growth rates between 26% and 50% are higher than for rates of 25% or less, whereas expectations for rates of 51% or higher are higher than for rates of 25% or less.

There is a statistically significant difference between the views and demands of dairy farmers participating in the study regarding the current situation and the rate of increase in productivity achieved with IPARD support. ($F_{(1,100)}$ = 6,698, p=0,010 <05). According to the Tukey test, which was conducted to determine among which groups the difference originates, there is a statistically significant difference between the perspectives of those with no increase in milk production efficiency (Mean = 2.93; SD = 0.79) and those of all other groups. As milk productivity (milk production per animal) increases, participants' demands increase.

There is a statistically significant difference between the milk production attitudes of dairy farmers participating in the study based on the rate of increase in productivity achieved through IPARD support ($F_{(1,100)}$ = 9,552, p=0,000<05). Looking at the Tukey test results, there is a statistically significant difference between those who did not experience an increase in productivity (Mean = 2.96; SD = 0.91) and the perspectives of all other groups. As milk productivity increases (the rate of change in milk production per animal), participants' milk production attitudes improve.

The income levels, milk production volumes, and productivity (milk production per animal) of the businesses participating in the study were examined in terms of their milk production practices. All these analyses conducted indicate that among the existing dairy producer enterprises benefiting from IPARD funds in the TR52 region, those with increased post-support income, those with higher current milk production volumes, and those with higher productivity growth rates were more likely to desire to increase milk production, continue milk production activities over the next 10 years, and benefit from IPARD support again, and that they demand diversification of the support provided by IPARD more than other groups.

In the TR52 region, 91% of existing dairy farms benefiting from IPARD support saw significant increases in their income after IPARD, 95% in their milk production, 93% in their production scale (number of dairy animals), 70% in the number of workers they employed, and 96% in their productivity. As can be seen, income growth, the current amount of milk produced, the rate of increase in milk production, and the rate of increase

in productivity affect producers' attitudes toward milk production, their expectations, and their observations and demands regarding the current situation. These findings are summarized in Table 9.

Table 9. Summary of analysis results on milk production attitude scale.

	Expectation	Observations and demands regarding the current situation	Milk production attitude
Income increase		-	Affects
Milk production growth rate	Affects	-	-
Amount of current milk production	Affects	-	Affects
Productivity growth rate	Affects	Affects	Affects

Table 9 shows that the future expectations of the businesses in question are influenced by the rate of increase in milk production, the current amount of milk production, and the rate of increase in productivity. Only the rate of increase in productivity affects businesses' observations and demands regarding the current situation. In milk production attitudes, income growth, current milk production volume, and productivity growth rate are influential. It appears that the businesses in question are generally satisfied with the IPARD program.

5. Discussion

The majority of existing dairy producers in the TR52 region benefiting from IPARD support have a high level of education. Despite this, almost all of the businesses included in the study have received project consulting services. The fact that businesses seek assistance from consulting firms in preparing IPARD projects and managing the process indicates that they face certain difficulties. Indeed, while some participants reported encountering bureaucratic problems during the application and implementation of IPARD projects, others reported difficulties with procedures in their interview responses. It seems that these businesses turn to consulting firms due to both bureaucratic formalities and difficulties in project preparation. The fact that TKDK covers the cost of consultancy services IPARD project preparation has also been effective in this orientation.

The fact that the existing dairy producer enterprises benefiting from the IPARD Program in the TR52 region are composed of experienced producers and that funds are disbursed after the completion of investments is important for ensuring the efficient use of resources and the sustainability of the enterprises' dairy production activities. It is estimated that this situation will have a positive impact on businesses through IPARD support, ensuring the continuity of these businesses even after the project and the completion of TKDK's audit process, and enabling these businesses, which are already milk producers, to maintain the production level they have achieved with IPARD support in the future.

The requirement that applicants for the IPARD program must have professional qualifications, such as having completed university, vocational school, or vocational high school in the relevant fields, or having at least three years of experience in the relevant field, has ensured that beneficiaries of the support have a high level of education and are experienced professionals in their field. This must have contributed to IPARD's positive impact on the areas it supports by increasing resource-use efficiency.

Another important point is that businesses can apply to TKDK in two ways to benefit from the IPARD program: as a new business or as an existing business seeking to increase its capacity, expand, and modernize. It was notable in this study that a large proportion of producers have long engaged in milk production but have submitted their project applications as “new business.” It appears that these producers, who have long engaged in this activity and generally continue production using traditional methods, have established a corporate identity through the IPARD program. They have transformed into a legally accountable and auditable corporate structure and have begun to produce under more professional conditions. Thus, the IPARD program has been effective in establishing new dairy production businesses in the TR52 region. According to our findings, only about a quarter of dairy producer companies applying to TKDK in the research area were aware of the support in question thanks to the promotional meetings. This finding indicates the

need for promotional and informational meetings by TKDK to be organized in such a way to reach a wider audience.

Another important issue is that nearly half (42.5%) of those currently employed are foreign workers. Some existing dairy producer businesses benefiting from IPARD support in the TR52 region, as stated in their oral statements, reported difficulty finding workers from the local population, and therefore had to employ foreign workers.

As a sociological phenomenon, rural-to-urban migration in Türkiye has increased in recent decades. Indeed, over the last 15 years, the rural population in Türkiye has been steadily declining in both absolute and relative terms. As youth migrated to urban areas, the proportion of elderly people in rural areas has increased. In particular, the migration of the working-age population from rural areas has led to difficulties in recruiting workers for the agriculture and livestock sectors, which are the main economic activities in these areas. Furthermore, the native population's reluctance to work in the livestock sector, where working conditions are relatively difficult, further hinders businesses in this sector from recruiting local workers. These two reasons are inevitably driving businesses to hire foreign workers. This result is consistent with Ravenstein's thesis[2] that "the labor shortage caused by migration from rural to urban areas is filled by international migrants" and Piore's "dual labor market theory,"[3] arguing that "local people do not want to work in secondary market jobs with difficult working conditions, leading employers to hire foreign workers for these jobs."

Most business owners have the conditions imposed on animal shelters are burdensome, that the costs of meeting these conditions are high, and that the cost of constructing barns is high. However, the construction of barns that take into account animal welfare and hygiene conditions has led to an increase in both milk production and productivity. Similarly, Koç (2016) reports that businesses benefiting from the IPARD program in the provinces of Sivas and Yozgat have made progress in hygiene and animal welfare. Following IPARD support, the increase in the number of new breeds with higher productivity (Simmental and Holstein cows etc.) has been another important factor contributing to productivity growth. According to Asan (2021), Simental and Holstein cows exhibit high fertility and milk yields, and dairy farms established under the IPARD program that produce milk from these two breeds sell their milk at higher prices than other farms. Therefore, the competitiveness and profitability of these businesses have increased.

A significant portion of existing dairy farms in the TR52 region that have benefited from IPARD support have experienced substantial increases in post-IPARD income, profit, milk production volume, production scale (number of milking animals), number of employees, and productivity (milk production per animal). Following IPARD, 91% of the businesses surveyed saw an increase in revenue, 88% saw an increase in profit, 95% saw an increase in milk production, 93% saw an increase in production scale, 70% saw an increase in the number of people employed, and 96% saw an increase in productivity.

This study reached similar results with those studies examining the impact of the IPARD program, including Otten (2013); Misha and Malaj (2015); Bilici (2016); Koç (2016); Gülçubuk et al. (2016); Zekic et al. (2016); Đuric and Puškarić (2018); Çoban et al. (2019); İnal (2020); Toker (2021) and Asan (2021). In his study of grape growers in the Tikves region of Macedonia, Otten (2013) concluded that most producers were unable to participate in the program. This result is consistent with our study's finding that small producers in the TR52 region were unable to benefit from the program and that the program had a limited impact on rural development. Similarly, Zekic et al. (2016) emphasize that the impact of the IPARD program on rural development in Serbia has been limited. The findings of the study conducted by Misha and Malaj (2015)

[2] Ravenstein linked the phenomenon of migration to the labor shortage in one part of the country being met by labor from other regions with dense populations, explaining this phenomenon within the framework of seven laws. According to the second law proposed by Ravenstein, the gap created by the migration of the rural population to urban areas is filled by migrants from distant locations/international migrants.

[3] According to Piore, the primary sector refers to markets where working conditions are better, job security and union rights exist, wages are relatively high, and large industries are located, while the secondary sector refers to markets where job security and union rights are lacking, working conditions are poor, wages are low, and small businesses are located. He argues that employers hire foreign workers to perform secondary market jobs that the local population does not do (Alonso, 1981: 527).

indicate that subsidies in Albania have increased the income of approximately 70% of smallholder farmers. According to our research, 91% of dairy farms in the region studied that benefited from IPARD support experienced an increase in income. Based on their research, Đuric and Puškarić (2018) note that sufficient institutional capacity and greater sharing of information about funds are necessary to secure more funding through the IPARD program. Bilici (2016) reports that employment increased following the allocation of IPARD funds. Again, Gülçubuk et al. (2016) found that IPARD support increased employment and, in addition, production capacity, productivity, and efficiency in resource allocation, findings consistent with our study. Inal (2020), who examined the effects of the IPARD program in the province of Diyarbakır, and Toker (2021), who examined it specifically in the provinces of Isparta and Burdur, found that production and employment increased. Çoban et al. (2019), who investigated the impact of IPARD on the dairy sector in Konya Province, reported that 88% of dairy farms increased their production and the number of employed. According to our study, the production and employment growth rates are 95% and 70%, respectively. Again, İnal (2020) reports findings similar to those of our study, noting that a large proportion of businesses experienced increases in the number of animals and in their income. Toker (2021) concludes that the IPARD program has increased productivity in the businesses he examined.

6. Conclusions

The development of rural areas is crucial for ensuring nationwide development. This is because rural regions lagging behind developing urban areas can negatively affect the country's overall economic performance and the development process as a whole. In rural areas, infrastructure deficiencies, lack of services such as education and healthcare, and widespread poverty are common problems. Economic underdevelopment in rural areas and the lag in living standards relative to urban areas is driving intense migration from these areas to cities areas. The high rate of migration from rural areas, and consequently the settlement of local residents in cities, is deepening the problem of rural development. To overcome this problem, it is necessary to increase the income and welfare levels of people living in rural areas and ensure the sustainability of development. This necessity has been a driving force for countries to develop specific policies for rural development, implement projects and programs within these policies, and execute rural development initiatives. One of these programs, IPARD, constitutes the final component of the IPA program, which provides financial support to candidate countries, including Türkiye, and potential candidate countries to help them align with the Union.

In conclusion, the IPARD program enables existing dairy producer enterprises in the TR52 region to improve their production structures, has a direct positive impact on their economic situation, and indirectly contributes to the development of rural areas. However, it can be said that IPARD's contribution to the development of rural areas has been limited. Many businesses engaged in small-scale production are unable to benefit from IPARD support. Consultancy services should be provided to potential beneficiaries to offer support, as well as training on the program. In other words, it is recommended that structural measures be taken to ensure that IPARD support reaches a larger number of producers. For example, IPARD can be promoted to a wider audience through promotional meetings and direct visits to rural areas. Producers can be trained in agriculture and livestock farming through various courses established under the program to enable them to benefit from the support. Credit and funding opportunities for small-scale producers can be diversified and simplified to ensure they benefit from the program. In addition, it is recommended that the types of support provided under the IPARD program be diversified. Funds provided to dairy farms may include the purchase of live animals. Production using high-yield animal breeds can be provided through institutional support.

Another significant finding of this study having potentially important implications of Turkish rural development is that there is evidence supporting the "dual labor market theory" and foreign worker employment is great. Therefore, it can be stated that the IPARD program's ability to create employment for the local population is limited. One might say that the IPARD program is insufficient to prevent migration from rural towards urban areas. In other words, the sustainability of rural development seems to be partially dependent on employment of the foreign labor force. Policymakers should give some thought on this problem

regarding the employment creation capacity of the IPARD program for the local labor force or, increasing the employment possibilities of this labor force in the urban areas.

The results obtained from the research are expected to be useful for dairy farmers and other industries considering utilizing this and similar programs in the future. Furthermore, the findings of this study will serve as a resource for academic research on the role of the IPARD program in rural development and, specifically, on the impact of its funds on the dairy production sector, at both the regional and national levels across Türkiye. It will also shed light on the design of rural development programs for policymakers. It is recommended that support for rural development be sustained to encourage producers to adopt more scientific, hygienic, and efficient production practices.

Finally, it should be emphasized that Türkiye 's progress achieved through programs established under externally funded policies such as IPARD should not be made to comply with criteria set by any foreign country or international organization, but rather to encourage the development of the social, cultural, administrative, and economic structures of those living in rural areas and to increase the competitiveness of businesses.

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